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THE
JOURNAL
OF THE
ROYAL GEOGRAPHICAL SOCIETY.

VOLUME THE FORTY-SECOND.

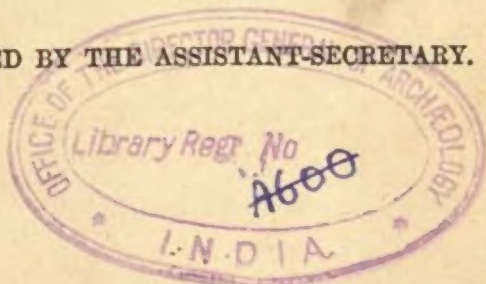
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Royal Geographical Society.

1872.

REPORT OF THE COUNCIL,

READ AT THE ANNIVERSARY MEETING ON THE 27TH MAY.

THE Council have the pleasure of submitting to the Fellows the customary annual Report on the financial and general condition of the Society.

Members.—During the year ending April 30th, 1872, there have been elected 190 new Members, 26 of whom have paid their Life Compositions. This is a considerable increase over the numbers of the previous year, when 156 new Members were elected; in 1870 there were 189 new Members; and, in 1869, 175. The losses the Society has sustained by death are 42 (one of whom was an Honorary Member), and 34 by resignation; besides these, 36 have been struck off the list for arrears of subscriptions; making a total loss of 112, or less by 18 than in the previous year. The net increase for the year is, therefore, 78; in 1871 the net increase was 26; in 1870, 101; in 1869, 87; and, in 1868, 79.

Finances.—The balance-sheet for the financial year (January to December, 1871), as will be seen in Appendix A, shows an income of 6637*l.* 3*s.* 7*d.*, after deducting balance in hand, and the proceeds of sale of Funded property. This includes 1000*l.*, the amount of a legacy bequeathed by the late President, Sir Roderick Murchison. In the previous year the income was 8042*l.* 6*s.* 1*d.* (including a legacy of 1800*l.*); the diminished dividends resulting from the change of investment of the Society's capital from Public Funds to Freehold Property, account for a portion of the decrease. The amount received

from subscriptions of Members was 4633*l.* 14*s.* in 1871; in 1870 it was 4897*l.* 10*s.*; and, in 1869, 4076*l.* 10*s.*

The expenditure (ordinary) for the past year was 3726*l.* 4*s.* 4*d.* In the previous year, 1870, it was 3845*l.* 10*s.* 6*d.*, and in 1869, 4454*l.* 12*s.* 1*d.*

The Council have especial satisfaction in announcing that since their last Report the fitting of the Society's House, No. 1, Savile Row, has been completed; and all the costs connected with the purchase of the property, the furnishing of the rooms, and the removal of the collections and offices, have now been defrayed. The sum of 5183*l.* 5*s.* 4*d.*, entered in the balance-sheet as having been expended during the year on this account, includes an item of 334*l.* paid for dilapidations on the termination of the lease of 15, Whitehall Place. It is gratifying to report that the experience of a whole Session, during which the House has been occupied, has proved that the expectations entertained of its suitability to the requirements of the Society have been fully confirmed.

This subject appears to the Council of such great importance, in connection with the Financial Condition and prospects of the Society, that they submit herewith a Special Report of Mr. James Fergusson, Chairman of the House and Fitting Committee, in which the disbursements under the various heads are given, and the change in the position of the Society brought about by the purchase of this property fully explained.

It will be satisfactory to the Fellows to learn that, during the present Session, and since the outlay above mentioned, the Council have been enabled to invest 1000*l.* out of the balance in hand.

The Finance Committee of Council have continued as before to hold their monthly Meetings and supervise the Society's accounts.

The annual Audit was held in the month of April: Sir Charles Nicholson, Bart., and Mr. Charles White, acting as auditors on behalf of the Council; and General Sir George Balfour, and Mr. H. Jones Williams, on behalf of the Fellows. The thanks of the Council, and the Society at large, are due to these gentlemen, who have given their time and the benefit of their great experience to this important task.

STATEMENT showing the RECEIPTS and EXPENDITURE of the Society from the Year 1848 to the 31st Dec. 1871.

STATEMENT showing the Progress of the INVESTMENTS of the Society from the Year 1832 to the 31st Dec. 1871.

Year.	Cash Receipts within the Year.			Cash Amounts invested in Funds.			Deducting Amounts invested in Funds; actual Expenditure.	End of the Year, Dec. 31.	Cash invested.			Amount of Stock.				
	£	s.	d.	£	s.	d.	£	s.		£	s.	d.	£	s.	d.	
1848	696	10	5	..	..	..	755	6	1	1832	3657	10	0	1000	0	0
1849	778	3	0	..	..	..	1098	7	6	1833	4130	0	0	4500	0	0
1850	1036	10	5	..	..	..	877	2	10	1834	4426	0	0	4800	0	0
1851	1056	11	8	..	..	..	906	14	7	1835	4426	0	0	4800	0	0
1852	1220	3	4	..	..	..	995	13	1	1836	4426	0	0	4800	0	0
1853	1917	2	6	..	..	..	1675	6	0	1837	4426	0	0	4800	0	0
1854	2565	7	8	..	..	..	2197	19	3	1838	4426	0	0	4800	0	0
1855	2584	7	0	..	..	..	2636	3	1	1839	4129	15	0	4500	0	0
1856	3372	5	1	533	10	0	2814	8	1	1840	3788	10	0	4150	0	0
1857	3442	13	4	378	0	0	3480	19	9	1841	2801	0	0	3150	0	0
1858	3089	15	1	..	..	..	2914	13	6	1842	2801	0	0	3150	0	0
1859	3471	11	8	950	0	0	3423	3	9	1843	2219	18	6	2578	4	4
1860	6449	12	1	466	17	6	5406	3	7	1844	2219	18	6	2578	4	4
1861	4792	12	9	1358	2	6	3074	7	4	1845	2219	18	6	2578	4	4
1862	4659	7	9	1389	7	6	3095	19	4	1846	1933	1	0	2278	4	4
1863	5256	9	3	1837	10	0	3655	4	0	1847	2133	1	0	2502	6	2
1864	4977	8	6	1796	5	0	3617	7	10	1848	1886	16	8	2224	1	10
1865	4095	8	3	1041	5	0	4307	4	5	1849	1886	16	8	2224	1	10
1866	5085	8	3	1023	15	0	4052	15	0	1850	1886	16	8	2224	1	10
1867	5462	7	11	1029	0	6	3943	17	4	1851	1886	16	8	2224	1	10
1868	5991	4	0	1857	3	9	4156	17	10	1852	1866	16	8	2224	1	10
1869	6859	16	0	2131	5	0	4616	0	8	1853	1662	14	10	2000	0	0
1870	8042	6	1	3802	6	0	3845	10	6	1854	1662	14	10	2000	0	0
1871.	6637	3	7	1000	0	0	3726	4	4	1855	1662	14	10	2000	0	0
										1856	2216	4	10	2600	0	0
										1857	2594	4	10	3000	0	0
										1858	2594	4	10	3000	0	0
										1859	3544	4	10	4000	0	0
										1860	4011	2	4	4500	0	0
										1861	5369	4	10	6000	0	0
										1862	6758	12	4	7500	0	0
										1863	8536	2	4	9500	0	0
										1864	10365	7	4	11500	0	0
										1865	11406	12	4	12500	0	0
										1866	12435	7	4	13500	0	0
										1867	13464	7	10	14500	0	0
										1868	15321	11	7	16250	0	0
										1869	17452	16	7	18250	0	0
										1870	19250	0	0	6700	0	0
										1871	20250	0	0	4700	0	0

In 1856 a Treasury Grant of 1000*l.* for the East African Expedition received.

In 1860 a Treasury Grant of 2500*l.* for the East African Expedition received.

In 1869 Legacy of Mr. Benjamin Oliveira, 1500*l.* 1*7s.* 1*d.*

In 1870 Legacy of Mr. Alfred Davis, 1800*l.*

In 1871 Legacy of Sir Roderick Murchison, 1000*l.*

In 1856 a Treasury Grant of 1000*l.* for the East African Expedition received.

In 1860 a Treasury Grant of 2500*l.* for the East African Expedition received.

In 1869 Legacy of Mr. Benjamin Oliveira, 1506*l.* 17*s.* 1*d.*

In 1870 Legacy of Mr. Alfred Davis, 1800*l.*

In 1871 Legacy of Sir Roderick Murchison, 1000*l.*

ASSET ACCOUNT.

	£	s.	d.
Freehold House, Fittings, and Furniture, estimated)	20,000	0	0
(exclusive of Map Collections and Library) .. }			
Funded property	4,700	0	0
Total.. .. .	24,700	0	0

Publications.—The 41st volume of the 'Journal' will be ready for delivery in a few days. The 15th volume of the 'Proceedings' has been completed since the last Report, and numbers 1 and 2 of volume 16th issued to the Fellows. The proceeds of the sale of these two publications to the public amounted last year to 112*l.* 9*s.* 5*d.*, and in the previous year to 110*l.* 5*s.* 5*d.*

A new and greatly revised edition of the 'Hints to Travellers,' edited by a special Committee of Council, consisting of Admiral Sir George Back, F.R.S., Vice-Admiral R. Collinson, C.B., and Francis Galton, Esq., F.R.S., was published last autumn. A number of copies has been printed for gratuitous distribution to travellers, and the treatise also forms No. 1 of the 16th volume of the 'Proceedings.'

Library.—1029 volumes of books and pamphlets have been added to the library during the year, of which 57 volumes only were obtained by purchase, the rest being donations or acquired by exchanges with kindred Societies.

Among the more valuable accessions are—A series of works forming the Geographical portion of the library of the late President, presented by Kenneth R. Murchison, Esq. 'Handbuch der Allgemeinen Geographie und Statistik,' 9 vols. By Dr. J. E. Wappäus of Leipzig. Presented by the author. 'Records of the Geological Survey of California,' 4 vols. 4to. Presented by the State of California. Harris's 'Voyages,' 4 vols. folio. Presented by J. J. Merriman, Esq. Blackie and Sons' 'Imperial Gazetteer,' new edition. Presented by the Publishers. New edition of 'Marco Polo.' By Colonel H. Yule. 'Report on the Expedition to Western Yunnan, via Bhamô.' By Dr. John Anderson. Presented by the author.

The Classified and Supplementary Catalogues of the library, mentioned in last year's Report, have been since published, and are to be obtained at the Society's Rooms—the Classified Catalogue at a charge to Fellows of 5*s.*

Map-Collection.—The accessions to this Department during the year consist of 1229 sheets of Maps and Charts; all of which have been arranged in geographical order, and incorporated in the collection so as to be available for reference by Fellows and the public.

The following are the more important accessions:—

738 sheets of the Ordnance Survey. Consisting chiefly of Maps of parishes and towns on the large scale. Presented by the Chief Commissioner of Works, through Colonel Sir H. James, R.E., Director of the Ordnance Survey.

29 Admiralty Charts. Presented by the Lords Commissioners of the Admiralty, through Admiral G. H. Richards, Hydrographer.

161 Charts of the French Dépôt de la Marine. Presented by the Minister of Marine through Vice-Admiral Pothuan.

208 Sheets of the Indian Survey. Presented by the Secretary of State for India.

Stieler's Hand Atlas. Parts 1 to 5, New Series. Presented by Justus Perthes.

26 Maps, 6 Atlases, and 3 Photographs. Presented by Kenneth R. Murchison, Esq., from the Collection of the late President, Sir Roderick I. Murchison.

A Series of separate Maps from the 'Geographische Mittheilungen.' Presented by Dr. A. Petermann.

The Council have the pleasure of reporting that they have appointed, since entering on their new premises, Mr. Keith Johnston, son of their Gold Medallist, as Assistant Curator in the Map Department. Under his management it is hoped that the desiderata in their Map Collection will soon be ascertained and supplied, thus increasing its utility to Fellows and the public.

Grants to Travellers.—The only Grant made in aid of expeditions during the year 1871 was a sum of 18*l.* 2*s.* for instruments to Mr. St. Vincent Erskine, of Natal, in aid of his second expedition to the River Limpopo.

The Grant of 500*l.* towards the Livingstone Search and Relief Expedition Fund not having been paid until January, 1872, does not appear in the accounts of the Financial Year 1871.

APPENDIX A.

BALANCESHEET FOR THE YEAR 1871.

[illegible]

APPENDIX B.

ESTIMATE FOR THE YEAR 1872.

<i>Receipts.</i>				<i>Expenditure.</i>			
	£.	s.	d.		£.	s.	d.
Cash Balance	703	16	3	Taxes and House Expenses	200	0	0
Annual Subscriptions	3250	0	0	Salaries and Wages	1550	0	0
Life Compositions	650	0	0	Library and Map-Rooms	250	0	0
Entrance Fees	500	0	0	Gold Medals and other Awards, including Murchison Fund	208	0	0
Arrears of Subscriptions	300	0	0	Postages, &c.	175	0	0
Royal Premium for 1871	52	10	0	Office Expenses	420	0	0
Parliamentary Grant	500	0	0	Journal and Proceedings	1250	0	0
Sale of Publications, Advertisements, &c.	115	0	0	Furniture and Repairs	120	0	0
Dividends and Small Receipts	220	0	0	Expeditions	650	0	0
				Available for Investment	1000	0	0
				Balance	198	6	3
	£5291 6 3				£5291 6 3		

LIVINGSTONE SEARCH AND RELIEF FUND.

The Council, as Administrators of the Livingstone Search and Relief Fund, beg to submit to the Fellows of the Society and to the Subscribers to the Fund, the following Statement of Account.

LIVINGSTONE SEARCH AND RELIEF EXPEDITION.—18th May, 1872.				<i>Expenditure.</i>	
<i>Receipts.</i>				£.	d.
Amount of Subscriptions received to the present date				4,642	5 3
Sum to be collected				516	8 0
•• Exclusive of Balance of the Government Grant in the hands of the British Consul at Zanzibar, and authorised to be expended on the objects of the Expedition.					
Expended for Outfit, Passage Money, &c., for Ident. Dawson and Party				516	12 0
,, Presents to Native Chiefs				158	14 3
,, Small charges in connection with the Expedition				17	6 9
Amount invested in Exchequer Bills				2,528	14 4
Advertising and Bills outstanding				156	9 11
Balance				1,780	16 2
				£5,158	13 5

Special Report.

REPORT OF THE FITTING COMMITTEE,

ADOPTED BY THE COUNCIL.

9th January, 1872.

THE Sub-Committees appointed by the Council to superintend the necessary alteration in their new house, and the removal of the property of the Society to No. 1, Savile Row, having now completed the works entrusted to their care, beg leave to report as follows:—

The Building Committee having, with the assistance of their Architect, Mr. Edmeston, prepared the necessary plans and specifications, a contract was entered into, with the sanction of the Council, with Mr. Cowland for the execution of the works for a sum of 3340*l.* During the progress of the contract, however, additional works and alterations were ordered, and approved of by the Council to the amount of 142*l.* All these works have been carried out to the satisfaction of your Committee, and they are happy to be able to report that, on the final adjustment of the accounts, there was found to be an excess of only 40*l.* 12*s.* 8*d.* beyond the contract sums above named. When it is considered how difficult it is, in altering an old building, to know beforehand what may be wanted, or what unforeseen difficulties may arise, your Committee consider the result highly creditable both to the Architect and also to the Builder employed in the works.

The accounts of the Building Committee stand as follow:—

		£	s.	d.
Mr. Cowland's original Contract	.. ..	3340	0	0
Additional Works	.. ..	142	0	0
Extras passed by Mr. Edmeston	.. ..	40	12	8
Architect's Commission, &c.	.. ..	209	7	6
Clerk of the Works	.. ..	66	8	0
		<hr/>		
		£3798	8	2

On entering on their duties, the Fitting and Removal Committee found that much of the furniture in the house in Whitehall Place was so worn out, that it would have required a considerable outlay upon it, had the Society remained in their old house, and was of little or no use in their new premises.

All the book-cases however, were brought away; but all required to be refitted, to suit their new places, and new cases and additions were made, which have increased the shelf-room available for books by about one-fourth. In like manner, though all the cases in the Map-room have been used again, six new cases for the Ordnance Survey have been added, at an expense of 8*l.* each, and 196 new Solander cases, with shelf-room to accommodate them, have been provided. The Council Room has been entirely refurnished, and so has the Office downstairs. New carpets and floor-cloths have been laid down everywhere, and the whole furniture of the house put into a state of thorough repair. From these circumstances, as well as from the greater size of the house and the increased accommodation given, the expenditure of this Committee has been more than 200*l.* in excess of what was originally estimated; but they have reason to believe that the work is well and effectually done, and the accommodation provided for the Library, Map-room and Offices is such that no expenditure of any important amount will be required for fitting or furniture for a considerable time to come.

With the exception of one small bill of 20*l.* 0*s.* 4*d.* for new Furniture, and 18*l.* 2*s.* 2*d.* for fitting, which unfortunately came in too late to be passed by the last Finance Committee, all the expenses incurred by this Committee have been settled for, and appear in last Year's accounts. They are as follow:—

	£	s.	d.
Removal expenses	146	15	4
New Furniture	494	3	8
Alterations, fitting, painting, &c. .. .	202	14	10
Gas fittings, including new meter, &c. .. .	161	7	3
Sundries	31	5	9
	<hr/>		
Deficiency as above, since paid	1036	6	10
	38	2	6
	<hr/>		
	£1074	9	4

On giving over charge of the house, No. 15, Whitehall Place, a claim was made on the Society, by the Agents of the Lessor, for 36*l.* 1*s.* 0*d.*, for dilapidations. Mr. Edmeston was appointed to examine this claim on the part of the Society, and, after a most

careful investigation of every item, reported that in terms of the Lease he considered the Society were fairly liable in the sum of 31*l.* 7*s.* 9*d.*—an abatement of 45*l.* 13*s.* 3*d.*, which, the Lessor's Agents having agreed to, was paid; adding to this the amount of the Surveyor's Commission—15*l.* 18*s.* 0*d.*—the sum paid under this head is 33*l.* 5*s.* 9*d.* In addition to these items, a sum of 14,527*l.* 0*s.* 2*d.* was expended, including law expenses, &c., on the purchase of the Freehold for the premises, No. 1, Savile Row, making the total expenditure 19734*l.* 3*s.* 5*d.*, under the following heads:—

	£	s.	d.
Purchase of Freehold	14,527	0	2
Alterations, &c.	3,798	8	2
Furniture, fitting, and removal	1,036	6	10
Dilapidations, Whitehall Place	334	5	9
Deficiency, since paid	38	2	6
Total expenditure	£19,734	3	5

To meet this expenditure, the Funded Property of the Society has been disposed of to the extent of 18,250*l.*, which realized—

net	£17,462	12	5
and Cash has been taken from Current			
Receipts	2,233	8	6
which, with the deficiency as above	38	2	6

Makes the total as before, £19,734 3 5

The interest which accrued on the investments so disposed of amounted to 647*l.* 10*s.* 0*d.*, and adding to this 100*l.* a year for the interest on this money spent from current income, which might have been invested if not so used, we have a total of 747*l.* 10*s.* 0*d.* as apparent rent; but from this must be deducted 150*l.* received as rent for the Vaults below the Map-room, leaving the nominal rent of the house to the Society something under 600*l.* a year.

This is no doubt in excess of what was paid in Whitehall Place;* but, had the Society remained there, there is no reason for supposing it would have obtained a new lease on more moderate terms than the Board of Works now pays, viz. 750*l.* a year with a premium of 500*l.*, and we should also have been obliged to expend a considerable sum in refitting and repairs; so we could not have calculated on remaining there at a rent practically under 800*l.* or 850*l.* per annum.

* In 1870 the rent, taxes, and house expenses amounted to 499*l.* 16*s.* 10*d.*

Be this as it may, there seems nothing in the position of the Royal Geographical Society, which would render a nominal rent of 600*l.* at all excessive, especially when it is considered that their present house is much more conveniently situated, for most of their Members, than the old one, and may ultimately be made to contain twice the accommodation for the Library, Maps, and general purposes of the Society, which could have been made available in their old premises.

As the Society will not in future pay rent, and there seems every reason for believing will also escape paying rates, there seems no reason for supposing that, under the most liberal management, the ordinary necessary expenditure should reach 3500*l.** per annum; while, on the other hand, it seems as little likely that the income from subscriptions, &c., irrespective of interest, should fall below the ordinary average of at least 5000*l.* to 5500*l.*† a year. Under these circumstances, the Society begins the year 1872 with a clear annual surplus income of from 1500*l.* to 2000*l.* per annum; a Cash Balance at the Banker's of 703*l.* 16*s.* 3*d.*, from which however, must be deducted bills for printing, &c., estimated at 500*l.*; 3700*l.* invested in East India 5 per cent. Stocks and Railway Debentures, exclusive of the Murchison Fund; and a Freehold House in every way suited to their purposes, and which it is believed would fetch in the open market nearly, if not quite, the money they have expended upon it.

JAS. FERGUSON,
Chairman.

* For last year it was estimated at 3370*l.*

† In the year 1870, the last for which the accounts are complete, these items amounted to 5313*l.* 4*s.* 11*d.*

Library Regulations.

I. The Library will be open every day in the week (Sundays excepted) from 10:30 in the morning to 4:30 in the afternoon,* except on New-Year's Day, Good Friday to Easter Monday inclusive, and Christmas week; and it will be closed one month in the year, in order to be thoroughly cleaned, viz. from the first to the last day of September.

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(May, 1873.)

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- 1859 70 Austen, Major Henry H. Godwin, 24th Foot, Trig. Survey, Punjab. Junior
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- 1861 90 Balfour, David, Esq. *Balfour-castle, Kirkwall, N.B.*
- 1847 Balfour, Maj.-Gen. Sir George, K.C.B., R.A., M.P. 6, *Cleveland-gardens, Hyde-park, W.; and Oriental Club, Hanover-square, W.*
- 1870 Balfour, Captain George M., R.N. 3, *Surrey-villas, Upper Norwood.*
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- 1860 Ball, John, Esq., F.R.S. 24, *St. George's-road, Eccleston-square, S.W.*
- 1872 Balls, W. H., Esq. 3, *The Terrace, Kennington-park, S.*
- 1852 Bancroft, Lieut.-Col. W. C., 16th Regt. *McGregor and Co., Charles-street, S.W.*
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- 1863 Barford, A. H., Esq., M.A. 1, *Cornwall-terrace, Regent's-park, N.W.*
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- 1844 *Baring, Thomas, Esq., M.P., F.R.S. 41, *Upper Grosvenor-street, W.*
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- 1857 Bartholomew, John, Esq. 17, *Brown-square, Edinburgh.*
- 1861 Bartlett, Herbert Lewis, Esq. *Union Club, S.W.*
- 1862 120 Barton, Alfred, Esq., M.D. *Hampton-court; and Oriental Club, W.*
- 1837 *Bateman, James, Esq., F.R.S., F.L.S. 9, *Hyde-park-gate South, W.*
- 1859 Bateman, John F., Esq., C.E., F.R.S. 16, *Great George-street, Westminster, S.W.*
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- 1866 Bateson, George, Esq. *Healington-hall, York.*
- 1866 Batten, John H., Esq. 2, *Manston-terrace, Havitree, Exeter.*
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- 1867 Baxter, Richard, Esq., Barrister-at-Law. 19, *Leinster-gardens, Baywater, W.*
- 1858 Bavenhale, Joseph H., Esq. *Worpleston, Guildford.*
- 1867 Bayley, Chas. Jno., Esq., C.B., M.A.

Year of
Election

- 1863 130 Bayley, H., Esq. *Blackheath-park, Kent.*
- 1873 * Baylis, Capt. E. W. D. 28, *John-street, Belford-row, W.C.*
- 1862 Bayly, Lieut.-Col. John, R.E. *Ordnance Survey Office; 151, St. George's-road, Pimlico, S.W.*
- 1862 Baynes, Lieut.-Col. R. Stuart. *Army and Navy Club, S.W.; and 38, Jermyn-street, S.W.*
- 1872 * Baynes, A. Henry, Esq. "*Faithlight*," *Hurrow-on-the-hill.*
- 1872 * Baynes, Wm. Wilberforce, Esq., D.L. *Campbellton House, Croydon.*
- 1868 Baynton, Captain Edward. *Trafalgar-lodge, Shirley, Southampton.*
- 1871 Benson, Sir Cecil, K.C.S.I. *Cheltenham; and 15, Elraston-place, South Kensington, W.*
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- 1870 * Beaumont, Somerset, Esq., M.P. 23, *Park-street, Park-lane, W.*
- 1851 * Beaumont, Wentworth B., Esq., M.P. 144, *Piccadilly, W.; and Bretton-park, Wakefield.*
- 1872 Beavan, Lieut. Reginald. *Messrs. Grimlay and Co., 55, Parliament-street, S.W.*
- 1867 * Beazeley, Michael, Esq., M.I.C.E. *Trinity Works, Penzance, Cornwall.*
- 1871 Benzley, Captain Geo. G., 83rd Regiment. *Army and Navy Club, S.W.*
- 1865 Bebb, Horatio, Esq. 13, *Gloucester-place, W.; and Leamington.*
- 1861 Beckett, Staff Commander James F., R.N., F.R.S.A. 23, *Stafford-terrace, Kensington, W.*
- 1838 * Beckford, Francis Love, Esq. *Orford-house, Ham-common, Surrey.*
- 1870 * Bective, Thomas, Earl of. 35, *Dover-street, W.; and Underley-hall, Kirkby Lonsdale, Westmoreland.*
- 1859 150 Belford, Rear-Admiral G. Augustus, R.N. *South-vice, Widmore-road, Bromley, Kent.*
- 1872 Bedwell, F. Le Breton, Esq. *Byron-villa, Whitehouse-road, Croydon.*
- 1870 * Beer, Julius, Esq. 23, *Park-crescent, Portland-place, W.*
- 1868 Bellingsfeld, Felix, Esq., C.M.G. 36, *Green-street, Park-lane; and Reform Club, S.W.*
- 1861 * Begbie, James, Esq. 2, *East India Avenue, Leadenhall-street, E.C.*
- 1860 Begbie, Thomas Stilling, Esq. 4, *Mission-house-place, E.C.*
- 1846 * Beke, Charles Tilstone, Esq., PH. D.L., F.S.A., &c. *London Institution, Finsbury-circus, E.C.*
- 1853 Belcher, Rev. Brymer. *St. Gabriel's, Pimlico, S.W.*
- 1830 * Belcher, Admiral Sir Edward, K.C.B., F.R.A.S. 22A, *Connaught-square, W.*
- 1838 Beldam, Edw., Esq. *Royston, Herts.*
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- | Year of Election | |
|------------------|--|
| 1868 | Bell, Wm. A., Esq., B.A., M.D. 18, <i>Hertford-street, Mayfair, W.</i> |
| 1864 | Bellamy, Edward, Esq. |
| 1872 | Bellville, Alfred, Esq. 20, <i>Penn-road-cillas, Holloway, N.</i> |
| 1873 | Benjamin, Horace B., Esq. 22, <i>Glasshouse-street, Regent-street, S.W.</i> |
| 1870 | Benjamin, Joseph, Esq. 22, <i>Glasshouse-street, Regent-street, W.</i> |
| 1830 | *Bennett, John Joseph, Esq., F.R.S. <i>Sandrock, Maresfield, Sussex.</i> |
| 1857 | Bennett, J. Nislon, Esq., M.D. 15, <i>Finbury-square, E.C.</i> |
| 1872 | 170 Bennie, A., Esq. 71, <i>Jermyn-street, S.W.; and Oriental-club, W.</i> |
| 1856 | *Benson, Robert, Esq. 16, <i>Croven-hill-gardens, Baywater, W.</i> |
| 1856 | *Benson, William, Esq., Barrister-at-Law. 16, <i>Croven-hill-gardens, Baywater, W.</i> |
| 1830 | Bentham, George, Esq., Pres. L.S., F.R.S. 25, <i>Wilton-place, S.W.</i> |
| 1868 | Bentley, George, Esq. <i>Upton-park, Slough.</i> |
| 1870 | *Benyon, Wm. H., Esq. <i>Stainley-hall, Ripon, Yorkshire.</i> |
| 1858 | Berens, H. Hulse, Esq. <i>Sidcross, Foot's Cray, Kent.</i> |
| 1865 | Bernard, P. N., Esq. 16, <i>Leadenhall-street, E.C.</i> |
| 1866 | Berridge, F., Esq. <i>Winchester-house, Winchester-road, Adelaside-road, N.W.</i> |
| 1856 | Berry, Josiah, Esq. 16, <i>Regent-square, W.C.</i> |
| 1872 | 180 Berthon, Peter Hy., Esq. 20, <i>Margaret-street, Cavendish-square, W.</i> |
| 1871 | Best, Commr. Jno. Chas. 91, <i>Westbourne-terrace, Hyde-park, W.</i> |
| 1863 | Best, William, Esq. <i>Kelstone, Millbrook, S. Hunts.</i> |
| 1867 | Best, William John, Esq. <i>Franklin-street, Belfast.</i> |
| 1867 | Bethune, Alexander M., Esq. <i>Otterburn, Hamlet-road, Upper Norwood; and 122, Leadenhall-street, E.C.</i> |
| 1842 | *Bethune, Admiral C. R. Drinkwater, C.B. 4, <i>Cromwell-rd., South Kensington, W.</i> |
| 1838 | Betts, John, Esq. 115, <i>Strand, W.C.</i> |
| 1866 | Bevan, William, Esq. 8, <i>Cedars-road, Clapham-common, S.</i> |
| 1862 | Bicker-Caarten, Peter, Esq. 30, <i>Northumberland-place, Baywater, W.</i> |
| 1871 | Bickersteth, Ven.-Archd. D.D. <i>The Prebendal, Aylesbury, Buckinghamshire.</i> |
| 1868 | 190*Bickmore, A. S., Esq., M.A. 252, <i>Pearl-street, New York.</i> |
| 1866 | Bicknell, Algernon S., Esq. 37, <i>Onslow-square, S.W.</i> |
| 1860 | Bidder, G. Parker, Esq., C.E. 24, <i>St. George-st., S.W.; and Mitcham, Surrey, S.</i> |
| 1871 | Biddulph, Geo. Tonmay, Esq. 43, <i>Churing-cross, S.W.</i> |
| 1869 | Bidie, Geo., Esq., M.D., &c. <i>Madras Establishment, Madras. Care of Messrs. H. S. King and Co.</i> |
| 1865 | Bidwell, Charles Toll, Esq. |
| 1859 | Bigge, Frederick W., Esq. <i>Bourne-place, Hildenboro', Kent.</i> |
| 1868 | Biggs, C. H. Walker, Esq. 2, <i>Alexandra-terrace, Reading.</i> |
| 1850 | Bigsby, John J., Esq., M.D., F.R.S. 89, <i>Gloucester-place, Portman-square, W.</i> |
| 1871 | Birch, Hon. J. F. Woodford, Colonial Secretary, Singapore. |
| 1860 | 100 Birch, H. W., Esq. 46, <i>Wellbeck-street, Cavendish-square, W.</i> |
| 1858 | Birch, John William, Esq. 9*, <i>New Broad-street, E.C.; and 27, Cavendish-square, W.</i> |
| 1862 | *Birchill, Captain B. H. H. |
| 1872 | *Bird, Richard, Esq. <i>Wynyan-house, Fulham, S.W.</i> |

Year of
Election.

- 1867 *Bischoffsheim, Henri Louis, Esq. 75, South Audley-street, W.
- 1858 Bishop, George, Esq., F.R.A.S. Union Club, S.W.; and The Meadows, Twickenham, S.W.
- 1861 Bishop, James, Esq. 11, Portland-place, W.
- 1870 Bishop, Wm. Henry, Esq. 8, Prince of Wales-terrace, Kensington-palace, W.
- 1867 Bissau, Frederick S. de Carteret, Esq., Lieut. R.N.M. 70, Berners-street, W.
- 1870 Black, Andrew H., Esq. 23, Royal-crescent, Glasgow.
- 1860 210* Black, Francis, Esq. 6, North-bridge, Edinburgh.
- 1867 Black, Thomas, Esq., Superintendent P. and O. Steam Navigation Company's Dockyard. Oriental-place, Southampton.
- 1869 Blacker, Louis, Esq. Flowermead, Wimbledon-park, S.W.
- 1870 Blackie, Thos. M., Esq., F.S.A. Chipping-hill School, Witham, Essex.
- 1849 Blackie, W. Graham, Esq., M.D. 36, Frederick-street, Glasgow.
- 1871 Blackmore, W., Esq. Founder's-court, Lothbury, E.C.
- 1862 *Blackstone, Frederick Elliot, Esq., R.C.L. British Museum, W.C.
- 1869 Blaine, Henry, Esq. 2, Cleveland-road, Castle-hill, Ealing, W.
- 1868 Blair, William Edward, Esq. Windham Club, S.W.
- 1865 Blake, Brig.-Gen. H. W.
- 1857 220* Blake, Wollaston, Esq., F.R.S. 8, Devonshire-place, W.
- 1872 Blakemore, Ramsey, Esq. Wimbledon, S.W.
- 1861 *Blakeney, William, Esq., R.N. Hydrographic-office, S.W.
- 1868 Blakiston, Matthew, Esq. 18, Wilton-crescent, S.W.
- 1857 Blakiston, Captain Thomas, R.A. 18, Wilton-crescent, S.W.
- 1868 Blanc, Henry, Esq., M.D., &c. Care of Messrs. H. S. King and Co., 45 Pall-mall, S.W.
- 1857 Blanshard, Richard, Esq. Fairfield, Lyminster, Hants.
- 1865 Blaxall, Francis H., Esq., M.D. Tendring, near Colchester.
- 1854 Blencowe, W. Robert, Esq. The Hook, Lewes.
- 1861 Blenkin, William, Esq. Adlestone, Surrey.
- 1839 230* Blewitt, Octavian, Esq. 4, Adelphi-terrace, Strand, W.C.
- 1864 More, Edward, Esq., D.C.L., F.R.S., F.S.A., &c. 4, Manchester-square, W.
- 1866 Blow, William Wootton, Esq. Care of Robert Evans, Esq., Belvedere-park, North Kent.
- 1861 Bloxsome, Oswald, jun., Esq. Derrington-hall, Leominster.
- 1868 Blumberg, George F., Esq. Mansfield-house, Clifton-gardens, Maida-vale, W.
- 1837 *Blunt, Jos., Esq.
- 1863 *Blunt, Wilfred S., Esq. Worth, Crawley, Sussex.
- 1868 Blyth, Philip P., Esq. (J.R. for Middlesex). 53, Wimpole-street, W.
- 1871 Blyth, Henry, Esq. 53, Wimpole-street, S.W.
- 1858 Bohn, Henry G., Esq. 18, Henrietta-street, Covent-garden, W.C.; and North-en-house, Twickenham, S.W.
- 1850 240 Bollaert, William, Esq. 36, Weymouth-street, Portland-place, W.
- 1862 Bolton, Major Francis John, 12th Regiment. 2, Westminster-chambers, S.W.
- 1861 Bompas, George Cox, Esq. 15, Stanley-gardens, Kensington-park, W.

Year of Election.	
1861	Bonney, Charles, Esq. <i>Adelaide, Australia.</i>
1858	Bonsor, George, Esq. 49, <i>Pall-mall, S.W.</i> ; and 2, <i>Baywater-terr., Kensington-square, W.</i>
1865	Bonwick, James, Esq. <i>St. Kilda, Melbourne.</i> Care of W. Deddow, Esq., 22, <i>South Audley-street, W.</i>
1872	Booker, Samuel, Esq. 47, <i>Albany, Old Hall-street, Liverpool</i> ; and <i>Demerari.</i>
1866	Booker, Wm. Lane, Esq. Care of Messrs. F. O'Brien and Co., 43, <i>Parliament-street, S.W.</i>
1845	*Borror, Dawson, Esq. <i>Altmont Ballon, Co. Carlow, Ireland.</i>
1856	*Botcherby, Blackett, Esq., M.A. 174, <i>Brompton-road, S.W.</i>
1858	250 *Botterill, John, Esq. <i>Flower-bank, Burley-road, Leeds.</i>
1871	Bourne, John, Esq., C.E. 21, <i>Richmond-road, Baywater, W.</i>
1872	Bousfield, William, Esq., M.A. 31, <i>Stunhope-gardens, Queen's-gate, W.</i>
1860	Boustead, John, Esq. 34, <i>Craven-street, Strand, W.C.</i>
1866	*Boucher, Emanuel, Esq. 12, <i>Oxford-square, Hyde-park, W.</i>
1865	Bouverie, P. P., Esq. 32, <i>Hill-street, Berkeley-square, W.</i>
1867	Bowell, Wm., Esq., F.R.S. <i>Chandos-house, Hereford</i> ; and <i>Gate-house Grammar-school, Hereford.</i>
1861	*Bowen, Charles Christopher, Esq. <i>Christchurch, Canterbury, New Zealand.</i> Care of A. O. Ottlysell, Esq., 7, <i>Westminster-chambers, S.W.</i>
1851	*Bowen, Sir George Ferguson, K.C.M.G., M.A., <i>Governor of New Zealand.</i>
1871	Bowes, John, Esq. <i>Warrington, Lancashire.</i>
1862	260 Bowie, John, Esq. <i>Conservative Club, S.W.</i>
1869	Bowker, James Henry, Esq. <i>Rasutoland, South Africa.</i> Care of Messrs. King and Co., <i>Cornhill, E.C.</i>
1868	Powly, William, Esq. <i>Cirencester.</i>
1856	Bowman, John, Esq. 9, <i>King William-street, E.C.</i>
1869	Bowra, E. C., Esq., <i>Commissioner of Maritime Customs.</i> <i>Ningpo, China.</i>
1865	Bowring, John Charles, Esq. <i>Larkbeare, Exeter.</i>
1866	Bowring, Samuel, Esq. 1, <i>Westbourne-park, W.</i>
1868	Bowser, Alfred T., Esq. <i>Cromwell-house, Hackney, E.</i>
1862	Boyes, Rev. W. B., <i>Secretary to Wesleyan Missionary Society.</i> <i>Wesleyan-Mission House, Bishopsgate-street, E.C.</i>
1845	*Boyd, Edward Lennox, Esq., F.R.S. 35, <i>Cleveland-square, Hyde-park, W.</i>
1870	270 *Bragge, William, Esq., C.E. <i>Shirley's-hill, Sheffield.</i>
1870	Braim, The Ven. the Archdeacon. <i>The Rectory, Bishop's Cundle, Sherborne, Dorset.</i>
1862	Braithwaite, Isaac, Esq. 27, <i>Austin-friars, E.C.</i>
1863	*Bramley-Moore, John, Esq. <i>Lansley-lodge, Gerrard's-cross, Bucks.</i>
1859	*Brand, James, Esq. 109, <i>Fenchurch-street, E.C.</i>
1868	Brand, James Ainsworth, Esq. 50, <i>Old Broad-street, E.C.</i>
1872	Brander, Captain William M., 24th Foot. <i>Chatham.</i>
1867	Brandis, Dr. D., F.R.S. <i>Director of Forests, Calcutta.</i> Care of W. H. Allen, Esq., 13, <i>Waterloo-place, S.W.</i>

Year of Election.

- 1859 Braybrooke, Philip Watson. *Assistant Colonial Secretary, Ceylon. Messrs. Price and Co., Craven-street, W.C.*
- 1863 *Brereton, Rev. John, LL.D., F.S.A. *Bedford.*
- 1864 120 *Breton, Commr. Wm. Henry, R.N., M.N.I. 15, *Camden-crescent, Bath; and The Rectory, Charmouth, Dorset.*
- 1862 Brett, Charles, Esq.
- 1867 Bridge, John, Esq. *Headley-house, near Lymm, Cheshire.*
- 1858 Bridges, Nathaniel, Esq.
- 1862 *Brierly, Oswald W., Esq. 8, *Lidlington-place, Harrington-square, Hampstead-road, N.W.*
- 1865 Briggs, Colonel J. P. *Lantern Tower, Salisbury.*
- 1861 *Bright, Sir Charles T., F.R.S. 26, *Duke-street, Westminster, S.W.*
- 1868 Bright, Henry Arthur, Esq. *Ashfield, Knotty Ash, Liverpool.*
- 1860 Bright, James, Esq., M.D. 12, *Wellington-square, Cheltenham.*
- 1864 Brine, Colonel Frederic, R.E. K.T.S. A.I.C.E., *Executive Engineer, Punjab. Athenæum Club, S.W.; Army and Navy Club, S.W.; Garrick Club, W.C.*
- 1866 290 Brine, Captain Lindsay, R.N., *Boldre-house, Lymington, Hants; and United Service Club, S.W.*
- 1861 Bristowe, Henry Fox, Esq. 6, *Ciccam-place, S.W., and 22, Old-square, Lincoln's-inn, W.C.*
- 1861 Broadwater, Robert, Esq. 3, *Billiter-square, Fenchurch-street, E.C.*
- 1861 Brodie, Walter, Esq. *Orsett-house, Orsett-terrace, Hyde-park, W.*
- 1861 Brölle, William, Esq. *Eastbourne, Sussex.*
- 1863 *Brodrick, The Hon. George C. 32a, *Mounf-street, W.*
- 1864 *Brooke, Sir Victor A., Bart. *Colebrooke-park, Co. Fermanagh, Ireland.*
- 1872 Brookes, Clifford J., Esq. *Calcutta. Care of W. G. Thorpe, Esq., 1, Riches-court, Lime-street, E.C.*
- 1862 Brookes, Thomas, Esq. *Mattock-lane, Ealing, W.*
- 1866 *Brooking, George Thomas, Esq. 33, *Sussex-gardens, Hyde-park, W.*
- 1866 300 *Brooking, Marmaduke Hart, Esq. 11, *Montagu-place, Bryanston-square, W.*
- 1870 *Brooks, Wm. Cunliffe, Esq., M.F., M.A., F.S.A., &c. 5, *Grosvenor-square, S.W.; Barons-hall, near Manchester; and Forest of Glen-Tanar, Abeyne, Aberdeenshire.*
- 1863 *Broughall, William, Esq. *Broadwater, Down, Tynbridge-wells.*
- 1868 *Brown, Colonel David (Madras Staff Corps). *India.*
- 1866 *Brown, Daniel, Esq. *The Elms, Larkhall-rise, Clapham, S.*
- 1864 Brown, Edwin, Esq., F.S.A. *Burton-on-Trent.*
- 1860 Brown, James, Esq. *Rossington, Yorkshire.*
- 1865 *Brown, James R., Esq., F.R.S.N.A. *Copenhagen. 84, Caversham-road, N.W.*
- 1861 *Brown, John Allen, Esq. *Surrey-lodge, Somerset-road, Ealing, W.*
- 1867 Brown, Richard, Esq., C.E. 115, *Leasdowne-road, Notting-hill, W.*
- 1867 310 Brown, Robert, Esq. 4, *Gladstone-terrace, Hope-park, Edinburgh.*
- 1866 *Brown, Samuel, Esq. 11, *Lombard-st., E.C.; and The Elms, Larkhall-rise, Clapham, S.*
- 1868 *Brown, Thomas, Esq. 8, *Hyde-park-terrace, Hyde-park, W.*

Year of Election	
1859	Brown, William, Esq. <i>Loat's-road, Clapham-park, S.</i>
1863	Browne, H. H., Esq. <i>Moor-close, Dinfield, Bracknell.</i>
1862	Browne, John Comber, Esq., Superintendent and Inspector of Government Schools. <i>Port Louis, Mauritius.</i>
1858	*Browne, John H., Esq. <i>Montpellier-lawn, Cheltenham.</i>
1869	Browne, Samuel Woolcott, Esq. 58, <i>Porchester-terrace, Hyde-park, W.</i>
1864	*Browne, Captain Wade. 35, <i>Charles-street, Berkeley-square, W.</i>
1858	Browne, William J., Esq. <i>Merly-house, Wimborne, Dorsetshire.</i>
1870	320 Browne, Wm. A. Morgan, Esq. <i>Groce-house, The Glebe, Champion-hill, S.E.</i>
1852	Browning, H., Esq. 73, <i>Grosvenor-street, Grosvenor-square, W.; and Old Warden-park, Biggleswade.</i>
1856	*Browning, Thomas, Esq. 6, <i>Whitehall, S.W.</i>
1859	Bruce, Rt. Hon. Henry Austin, M.P. 1, <i>Queen's-gate, S.W.; and Duffryn, Aberdare, Glamorganshire.</i>
1863	Brunton, John, Esq., M.I.C.E., F.G.S. 13A, <i>Great George-street, S.W.</i>
1873	Brunton, R. H., Esq., F.G.S., &c. 1, <i>Oxford-villas, Batham, S.W.</i>
1856	Bryant, Walter, Esq., M.D., F.R.C.S. 23A, <i>Sussex-square, Hyde-park-gardens, W.</i>
1867	*Buckleuch, His Grace the Duke of, K.G., F.R.S. <i>Dulwich Palace, near Edinburgh; and Montagu-house, Whitehall, S.W.</i>
1869	Buckley, John, Esq. <i>Care of Messrs. Dalgety, Du Crox, and Co., 52, Lombard-street, E.C.</i>
1863	Budd, J. Palmer, Esq. 30, <i>Cornwall-gardens, South Kensington, W.</i>
1867	330* Bulger, Major George Ernest, F.L.S., &c. <i>Care of Mr. Booth, 307, Regent-st., W.</i>
1868	*Bull, William, Esq., F.L.S. <i>King's-road, Chelsea, S.W.</i>
1865	Buller, Sir Edward M., Bart., M.P. <i>Old Palace-yard, S.W.; and Dithorn-hall, Cheddle, Staffordshire.</i>
1869	Buller, Walter L., Esq., F.L.S. <i>Hanganui, New Zealand. Care of Mr. J. Van Voorst, 1, Paternoster-row, E.C.</i>
1863	Bullock, Captain Charles J., R.N. <i>Hydrographic-office, S.W.</i>
1830	*Bullock, Admiral Frederick. <i>Woolwich, S.E.</i>
1864	Bullock, W. H., Esq. <i>Grosvenor-hill, Wimbledon, S.W.</i>
1860	*Bunbury, Sir Charles James Fox, Bart., F.R.S. <i>Barton-hall, Bury St. Edmund's.</i>
1839	Bunbury, E. H., Esq., M.A. 35, <i>St. James's-street, S.W.</i>
1863	Bundock, F., Esq. <i>Windham Club, S.W.</i>
1861	340 Burges, William, Esq. <i>Fethard, Co. Tipperary.</i>
1866	*Burgess, James, Esq., M.R.A.S., Hon. Sec. Bombay Geogr. Soc., Principal of Sir J. Jejeebhoy's Parsee B. Institution. <i>Hornby-row, Bombay. Care of Messrs. Trübner, Ludgate-hill, E.C.</i>
1871	*Burke, Samuel Constantine, Esq. 84, <i>Harbour-street, Kingston, Jamaica.</i>
1864	Burn, Robert, Esq. 5, <i>Clifton-place, Sussex-square, W.</i>
1872	Burne, Major O. F. <i>India-office, S.W.</i>
1871	Barney, Commr. Chas., R.N., Superintendent Greenwich Hospital Schools, S.E.
1863	*Burns, John, Esq. <i>Castle Wemyss, by Greenock, N.B.</i>
1861	*Burr, Higford, Esq. 23, <i>Eaton-place, S.W.; and Aldermaston-court, Berkshire.</i>

Year of
Election.

- 1872 Burrows, Sir J. Cordy. 62, *Old Steine, Brighton.*
- 1857 Burstal, Captain E., R.N. 9, *Park-villas, Lower Norwood, S.*
- 1872 350 Burt, Charles, Esq. *Friars'-Stile-lodge, Richmond-hill.*
- 1830 *Burton, Alfred, Esq. 64, *Marina, St. Leonards.*
- 1833 *Burton, Decimus, Esq., F.R.S. 1, *Gloucester-houses, Gloucester-crescent, W.*
- 1859 *Burton, Capt. Richd. Fras., 18th Regt. Bombay N.I. *Athenrum Club*; 14, *Montagu-place, Montagu-square, W.* Care of R. Arundell, Esq., *Admiralty, Spring-gardens, S.W.*
- 1869 Burton, William Samuel, Esq. *South-villas, Regent's-park, N.W.*
- 1858 Bury, William Coutts, Viscount. 48, *Rutland-gate, S.W.*
- 1861 Bush, Rev. Robert Wheeler, M.A. 29, *Milner-square, Islington, N.*
- 1873 Busk, Capt. Hans, D.L., LL.D., F.R.S., Hon. D.C.L. Oxford. 21, *Ashley-place, S.W.*; and *United University Club.*
- 1868 Busk, William, Esq., M.C.P., &c. 28, *Deesborough-gardens, S.W.*
- 1861 Butler, Charles, Esq. 3, *Connaught-place, Hyde-park, W.*
- 1871 360 Butler, Capt. W. F., 69th Regiment.
- 1867 Butler, E. Dundas, Esq. *Geographical Department, British Museum, W.C.*
- 1860 *Butler, Rev. Thomas. *Rector of Lough, Nottinghamshire.*
- 1870 Butter, Donald, Esq., M.D., &c. *Hazelwood, Church-road, Upper Norwood, S.E.*
- 1870 Buxton, Francis W., Esq., B.A. 23, *Upper Brook-street, W.*
- 1869 Buxton, Henry Edmund, Esq., B.A. *Bink-house, Great Yarmouth, Norfolk.*
- 1873 *Buxton, John H., Esq. *Brewery, Spitalfields, E.C.*
- 1858 *Buxton, Sir Thomas Fowell, Bart. 14, *Grosvenor-crescent, W.*; and *Wurlics, Waltham-abbey, Essex.*
- 1864 Bythones, Captain J., R.N., V.C. 20, *Grosvenor-place, Bath.*
- 1830 *Cabbell, B. B., Esq., M.A., F.R.S., F.S.A. 1, *Brick-court, Temple, E.C.*; 32, *Portland-place, W.*; and *Aldwick, Sussex.*
- 1866 370 Caldbeck, Captain J. B. (P. and O. Sup. at Aden). 17, *West Mall, Clifton*; and 122, *Leadenhall-street, E.C.* Care of Mrs. Caldbeck, *Brownswood-house, Ennis-road, Hornsey, N.*
- 1861 Calthorpe, The Hon. Augustus Gough. 33, *Grosvenor-square, W.*
- 1855 *Calthorpe, F. H. Gough, Lord. 33, *Grosvenor-square, W.*
- 1854 Calvert, Frederic, Esq., Q.C. 38, *Upper Grosvenor-street, W.*
- 1871 *Cama, Dorabjee Pestroojee, Esq. 3 and 4, *Winchester-street-buildings, E.C.*
- 1861 Cameron, Donald, Esq., M.P. *Anchnazurry, Inverness-shire.*
- 1872 Cameron, Capt. Donald R., R.A. 4, *Camden-jrore, Kensington, W.*
- 1858 Cameron, Major-General Sir Duncan Alexander, R.N., C.B. *New Zealand.*
- 1873 Cameron, Henry Lovett, Esq., 25, *Granville-place, Portman-square, W.*
- 1864 Cameron, J., Esq. 32, *Great St. Helen's, E.C.*
- 1866 380 Cameron, R. W., Esq. *Staten Island, New York.* Care of Messrs. Brooks and Co., *St. Peter's-chambers, Cornhill, E.C.*

Year of Election.	
1871	Campbell, Allan, Esq. 35, <i>St. James's-place, S.W.</i>
1861	Campbell, Rear-Admiral Frederick, R.N. <i>H.M.S. 'Agincourt.'</i>
1866	Campbell, George, Esq., D.C.L., Lieut.-Governor of Bengal; and <i>Athenium Club, S.W.</i>
1844	*Campbell, James, Esq. <i>Grove-house, Hendon, Middlesex; and 37, Seymour-street, W.</i>
1857	Campbell, James, Esq., Surgeon R.N. <i>Bangkok, Siam. Care of Messrs. H. S. King and Co.</i>
1834	*Campbell, James, Esq., jun. <i>Hampton-court-green, S.W.</i>
1863	*Campbell, James Duncan, Esq. <i>Peking. Care of H. C. Butcher, Esq., 15, Cannon-street, E.C.</i>
1856	Campbell-Johnston, A. R., Esq., F.R.S. <i>Heatherley, Sandhurst, near Wokingham, Berks.</i>
1869	Campbell, Robert, Esq., J.P. 31, <i>Lowndes-square, S.W.; and Burcot-park, Lechlade, Gloucestershire.</i>
1872	390 Campbell, Robert, Esq. <i>Lednock-hall, Comrie, Perthshire.</i>
1872	Campbell, William, Esq. <i>New Club, Glasgow.</i>
1871	Campos, Dr. J. B. Gonalves. <i>Maranhão, Brazil.</i>
1866	Canning, Sir Samuel, C.E. <i>The Manor-house, Abbots Langley, near Watford, Herts.</i>
1864	Cannon, John Wm., Esq. <i>Castle-grove, Tamm.</i>
1857	Cannon, Lieut.-General R. 5, <i>Park-rillas, Folkestone.</i>
1853	*Cardwell, Right Hon. Edward, M.P. 74, <i>Liuton-square, S.W.</i>
1863	*Carew, R. Russell, Esq., J.P. <i>Carpendera-park, Watford, Herts; and Oriental Club, W.</i>
1869	Carey, Rev. Tupper. <i>Fifield, Basing, Salisbury; and 15, Hyde-park-gardens, W.</i>
1872	Carfrae, John, Esq. 51, <i>St. Swithin's-lane, E.C.</i>
1862	400 Cargill, John, Esq., Member of the Legislative Assembly of New Zealand and Legislative Council of Otago. <i>Dunedin, Otago, New Zealand.</i>
1863	*Cargill, Wm. W., Esq. 4, <i>Connaught-place, Hyde-park, W.</i>
1873	Carillon, John Wilson, Esq., F.R.S., &c. <i>Wormhill, Buxton.</i>
1870	Carleton, Colonel Dudley. 42, <i>Berkeley-square, W.</i>
1864	*Carmichael, L. M., Esq., M.A., 5th Lancers. <i>Oxford and Cambridge Club, S.W.</i>
1865	*Carnegie, David, Esq. <i>Eastbury, by Watford, Herts.</i>
1883	Carnegie, Commander the Hon. J., R.N. 26, <i>Pall-mall, S.W.</i>
1869	Carr, William, Esq. <i>Dene-park, near Tunbridge.</i>
1861	Carter, Lieut.-Colonel Hugh Bonham, Coldstream Guards. <i>Guards' Club, S.W.; and 1, Carlisle-place, Victoria-street, S.W.</i>
1868	Carter, Captain Thomas Tupper, R.E. <i>Care of Messrs. H. S. King and Co., 45, Pall-mall.</i>
1857	410 Cartwright, Col. Henry, Grenadier Guards, M.P. <i>Lydon-hall, Banbury.</i>
1860	*Carver, Rev. Alfred J., D.D., Master of Dulwich College. <i>Dulwich, S.E.</i>
1869	Casberd-Boteler, Commr. W. J., R.N. <i>The Elms, Toplow; and Naval and Military Club, Piccadilly, W.</i>
1858	Casella, Louis P., Esq. 147, <i>Holborn-vire, E.C.; and South-grove, Highgate, N.</i>

Years of
Election.

- 1872 Caton, R. Redmond, Esq., F.R.S.A. *Union Club; and Binbrook-house, Market-moor, Lincolnshire.*
- 1872 Cattley, Edward, Esq. 34, *Woburn-square; and St. Petersburg.*
- 1860 Cave, Amos, Esq. 109, *New-road, Kennington-park, S.; and Rathbone-place, Oxford-street, W.*
- 1857 Cave, Captain Laurence Trent. 75, *Chester-square, W.*
- 1858 Cave, Right Hon. Stephen, M.P. 35, *Wilton-place, S.W.*
- 1869 Cayley, Dr. Henry.
- 1863 420 Challis, John Henry, Esq. *Reform Club, S.W.*
- 1871 *Chalmer, Lieut. Reginald, 60th Royal Rifles. *Peshawar, East Indies.*
- 1865 Chambers, Charles Harcourt, Esq., M.A. 2, *Chesham-place, S.W.*
- 1858 Champion, John Francis, Esq. *High-street, Shrewsbury.*
- 1866 *Chandless, William, Esq. 5, *Portman-street, Oxford-street, W.*
- 1870 Chapman, Capt. E. F., R.A. *The Grove, Tunbridge.*
- 1863 *Chapman, Spencer, Esq. *Rochampton, S.W.*
- 1870 Charles, Rev. David, M.A. *University College, Aberystwith, South Wales.*
- 1861 Charnock, Richard Stephen, Esq., PH.D., F.R.S.A. 8, *Gray's-inn-square, W.C.; and The Grove, Hammersmith.*
- 1872 Chatwood, Samuel, Esq. 5, *Wentworth-place, Bolton.*
- 1864 430 Chandle, Walter, Esq., B.A., M.D. Camb. 2, *Hyde-park-place, Cumberland-gate, W.*
- 1855 Cheshire, Edward, Esq. 3, *Tanbrugh-park, Blackheath, S.E.; and Conservative Club, S.W.*
- 1858 Chetwode, Augustus L., Esq. 7, *Suffolk-street, Pall-mall-east, S.W.; and Chilton-house, Thame, Oxfordshire.*
- 1870 Chichester, Sir Bruce, Bart. *Arlington-court, Barnstaple.*
- 1858 Childers, Right Hon. Hugh C. E., M.P. 17, *Prince's-gardens, W.; and Australia.*
- 1856 Childers, John Walbanke, Esq. 13, *Queen-square, S.W.; and Cantley-hall, near Doncaster.*
- 1837 *Chlmmo, Commr. William, R.N. *H.M.S. 'Nassau.' Care of the Hydrographic-office, S.W.*
- 1872 Chinery, D., Esq. (Consul-General for Liberia). 30, *Gracechurch-street, E.C.*
- 1869 Chinnock, Frederick George, Esq. 86, *Cornwall-gardens, Queen's-gate, W.*
- 1872 Christie, James Alexander, Esq. *Ftushing, Falmouth.*
- 1872 440 Christie, T. Beath, Esq., M.D. *Faling.*
- 1871 Church, Colonel Geo. Earl. *Care of J. W. Barry, Esq., 19, Great Winchester-street, E.C.*
- 1830 *Church, W. H., Esq.
- 1849 Churchill, Lord Alfred Spencer. 16, *Rutland-gate, S.W.*
- 1856 Churchill, Charles, Esq. *Weybridge-park, Surrey.*
- 1869 Churchill, Henry A., Esq., H.M. Consul, Zanzibar. *Care of Messrs. King and Co., 45, Pall-mall, S.W.*
- 1870 Clapton, Edward, Esq., M.D., &c. *St. Thomas's-street, Southwark, S.E.*
- 1863 Clark, Lieut. Alex. J. 14, *St. James's-square, S.W.; and Eveswell-house, Minster, Newport, Monmouthshire.*

Year of Election.	
1870	Clark, Charles, Esq. 20, <i>Belmont-park, Lee, Kent, S.E.</i>
1872	Clark, George Thomas, Esq. 10, <i>Stanhope-street, Mayfair, W.; Athenæum Club, S.W.; and Doulaia-house, Merthyr Tydfil.</i>
1866	450 Clark, J. Howarth, Esq. <i>Cheetham Collegiate-school, Manchester.</i>
1868	Clark, John Gilchrist, Esq. <i>Spedlock, Dumfries, Dumfriesshire.</i>
1862	Clark, J. Latimer, Esq. 3, <i>Westminster-chambers, Victoria-street, S.W.; and Beechmont, Dulwich, S.E.</i>
1870	Clark, Robert, Esq. 46, <i>Chepstow-villas, Bayswater, W.</i>
1868	Clark, William, Esq. <i>The Cedars, South Norwood.</i>
1859	Clark, Rev. W. Geo., M.A. <i>Trinity College, Cambridge.</i>
1865	Clark, W. H., Esq. 6, <i>Leinster-terrace, Hyde-park, W.</i>
1859	Clarke, Captain A., R.E. <i>Army and Navy Club, S.W.</i>
1872	Clarke, Joseph, Esq. <i>North-hill-villa, Highgate, N.</i>
1855	* Clarke, Rev. W. B., M.A. <i>St. Leonard's, Sydney, New South Wales. Care of Messrs. Richardson, Cornhill.</i>
1868	460 Clarke, W., Esq. 44, <i>Loebroke-grove, W.</i>
1862	Claude, Eugène, Esq. <i>Villa Helvetia, Carlton-road, Tufnell-park, N.</i>
1863	Clayton, Captain John W., late 15th Hussars. 14, <i>Portman-square, W.</i>
1866	Clayton, Sir W. R. <i>Hurleyford, Great Marlow, Bucks.</i>
1866	* Cleghorn, Hugh, Esq., M.D. <i>Stravithy, St. Andrew's.</i>
1871	Cleghorn, John, Esq., M.B.S., M.B.A., &c. 3, <i>Spring-gardens, S.W.</i>
1863	Clements, Rev. H. G. <i>United University Club, S.W.</i>
1870	Clements, Robert George, Esq. 97, <i>Victoria-park-road, E.</i>
1860	Clerk, Captain Claude. <i>Military Prison, Aldershot, Hants.</i>
1858	Clermont, Thomas, Lord. <i>Ravensdale-park, Newry, Ireland.</i>
1845	470* Cleveland, His Grace the Duke of. <i>Cleveland-house, 17, St. James's-square, S.W.</i>
1861	Clifford, Sir Charles. 2, <i>Savile-row, W.; and Campden-house, Broadway, Worcestershire.</i>
1858	Clifford, Charles Cavendish, Esq. <i>House of Lords, S.W.</i>
1871	Clifford, Henry, Esq., C.E. 1, <i>Lansdown-place, Blackheath, S.E.</i>
1866	Clinton, Lord Edward. <i>Army and Navy Club, S.W.</i>
1865	Clipperton, Robert Charles, Esq., H.B.M. Consul, Nantes.
1856	Clive, Rev. Archer. <i>Whitefield, Hereford.</i>
1863	Clowes, E., Esq. <i>Salisbury-square, Fleet-street, E.C.</i>
1854	Clowes, George, Esq. <i>Duke-street, Stamford-street, Blackfriars, S.E.; Charing-cross, S.W.; and Surbiton, Surrey.</i>
1854	Clowes, William, Esq. <i>Duke-street, Stamford-street, Blackfriars, S.E.; Charing-cross, S.W.; and 51, Gloucester-terrace, Hyde-park, W.</i>
1861	480 Clowes, William Charles Knight, Esq., M.A. <i>Duke-street, Stamford-street, Blackfriars, S.E.; and Surbiton, Surrey.</i>
1852	Cobbold, John Chevalier, Esq. <i>Athenæum Club, S.W.; and Ipswich, Suffolk.</i>
1859	Cochrane, Rear-Admiral the Hon. A., C.B. <i>Junior United Service Club, S.W.</i>
1868	Cock, Edward, Esq. <i>Kingston-on-Thames.</i>

Year of
Election

- 1869 *Cockburn, Captain James George. (*Raoul Pindee, Bengal.*) *Care of Colonel Cockburn, Bracon Ash, Norwich.*
- 1869 Cockerton, Richard, Esq. *Cornwall-gardens, South Kensington, W.*
- 1862 *Cockle, Captain George. 9, *Bolton-gardens, South Kensington, W.*
- 1859 Cocks, Colonel C. Lygon (*Coldstream Guards*). *Crediton, Devon.*
- 1865 Cocks, Major Octavius Yorke. 180, *Piccadilly, W.*
- 1841 *Cocks, Reginald Thistlethwayte, Esq. 43, *Charing-cross, S.W.*; and 22, *Hertford-street, Mayfair, W.*
- 1871 490 *Cockshott, Arthur, Esq., M.A., *Eton College.*
- 1873 Coltrington, General Sir William, G.C.B. 110, *Eaton-square, S.W.*
- 1872 *Coe, Rev. C. C. *Seymour-street, Leicester.*
- 1857 Coghlan, Edward, Esq. *Training-institution, Gray's-inn-road, W.C.*
- 1861 Coghlan, J., Esq., Engr.-in-Chief to the Government. *Buenos Ayres.* *Care of H. C. Forde, Esq., 6, Duke-street, Adelphi, W.C.*
- 1862 Coghlan, Lieut.-Gen. Sir William M., K.C.B., R.A. *Ramsgate, Kent.*
- 1865 Colchester, Reginald Charles Edward, Lord. 1, *Walton-street, S.W.*
- 1868 Cole, William H., Esq. 64, *Portland-place, W.*
- 1867 Colebrook, John, Esq. 15, *Hans-place, Chelsea, S.W.*
- 1841 *Colebrooke, Sir Thomas Edward, Bart., F.R.A.S. 37, *South-st., Park-lane, W.*
- 1854 500 Coleman, Everard Home, Esq., F.R.A.S. *Registry and Record Office, Adelphi-place, London-bridge, E.C.*
- 1848 Coles, Charles, jun., Esq. 86, *Great Tower-street, E.C.*
- 1835 *Collett, William Rickford, Esq. *Carnarvon*; and *Carlton Club, S.W.*
- 1867 Collier, C. T., Esq., Barrister of the Middle Temple. *Oriental Club, W.*
- 1872 Collingwood, Lieut. W. *India Office, S.W.*
- 1858 Collinson, Henry, Esq. 7, *Devonshire-place, Portland-place, W.*
- 1866 Collinson, John, Esq., C.E. 37, *Portchester-terrace, Hyde-park, W.*
- 1855 Collinson, Vice-Admiral Richard, C.B. *Haven-lodge, Ealing, W.*; and *United Services Club, S.W.*
- 1871 *Collis, Capt. Gustavus W. Berry, 6th Royal Regiment. *Care of Mrs. Collis, Barton-terrace, Dawlish, Devon.*
- 1862 Colquhoun, Sir Patrick M. de, Q.C., LL.D. 2, *King's-bench-walk, Temple, E.C.*
- 1869 510 Colvill, William H., Esq., Surg. H.M. Ind. Armpy. *Lawen-bank, Hampstead*; and *Baghdad.*
- 1861 *Colville, Charles John, Lord. 42, *Eaton-place, S.W.*
- 1865 Colvin, Binny J., Esq. 71, *Old Broad-street, E.C.*
- 1868 Colvin, Captain W. B., Royal Fusiliers. *Care of Messrs. Cox and Co., Craig's-court, S.W.*
- 1863 Combe, Lieut. B. A.
- 1861 Combe, Thomas, Esq., M.A. *University Press, Oxford.*
- 1871 Comber, Colonel A. K. (Dep.-Comm'd. of Assam, Goalpara). *Care of Messrs. Woodhead.*
- 1864 Commerell, Commr. J. E., R.N., V.C.
- 1864 Conder, Rev. John. *Hallbrooke-house, New Wandsworth, S.W.*

Year of Election	
1868	Cusey, Rev. T., M.A. 4, <i>Princess-square, Plymouth.</i>
1861	520 Constable, Captain Chas. Golding, I.N. 6, <i>Harley-road, St. John's-wood, N.W.</i>
1872	*Cook, F. L., Esq. 3, <i>Cromwell-place, South Kensington.</i>
1868	Cook, H. Esq., M.D., &c. <i>Care of Messrs. Forbes and Co., 12, Leadenhall-street, E.C.</i>
1871	Cook, Henry, Esq. <i>Grammar-school, Wantage, Berks.</i>
1859	Cooke, Lieut.-Col. A. C., R.E. <i>Bermuda.</i>
1863	*Cooke, E. W., Esq., A.R.A., F.R.S., F.L.S., F.Z.S., F.G.S., Accad. Bell. Art. Vened. et Holm. Socius. <i>Glen-Andrei, Groombridge, Sussex; and Athenæum Club, S.W.</i>
1856	Cooke, John George, Esq. 25, <i>Austin-friars, Old Broad-street, E.C.</i>
1860	Cooke, Nathaniel, Esq. 3, <i>Ladbroke-terrace, Notting-hill, W.</i>
1852	Cooke, Robt. F., Esq. 50, <i>Albemarle-street, W.</i>
1860	Cooke, William Henry, Esq., Q.C. 4, <i>Elm-court, Temple, E.C.</i>
1872	530 *Cookson, F., Esq. <i>Teddington-hall, Teddington.</i>
1830	Cooley, William Desborough, Esq. 13, <i>College-place, Camden-town, N.W.</i>
1872	Cooper, Alfred, Esq. 9, <i>Henrietta-street, Curculish-square, W.</i>
1872	Cooper, Commr. B. J. <i>Mouat, Torquay.</i>
1862	Cooper, Sir Daniel. 20, <i>Prince's-gardens, South Kensington, S.W.</i>
1856	Cooper, Lieut.-Col. Edward, Grenadier Guards. 5, <i>Bryanston-square, W.</i>
1860	Cooper, Lieut.-Col. Joshua H., 7th Fusiliers. <i>Dunboden, Mullingar.</i>
1857	*Coote, Captain Robert, R.N. <i>Shales, Bittern, Southampton.</i>
1872	Cope, Charles Rogers, Esq. <i>Edgbaston, Warwick.</i>
1871	Cope, Henry, Esq. 18, <i>Montagu-street, Russell-square, W.</i>
1853	540 Copley, Sir Joseph William, Bart. <i>Sprotborough, Doncaster.</i>
1864	Cork and Orrery, Earl of. 1, <i>Grafton-street, W.</i>
1868	Cork, Nathaniel, Esq. <i>Ivy-lodge, 9, Warwick-road, Upper Clapton, N.E.</i>
1868	Corner, William Mend, Esq. <i>Surrey View, Woodside, South Norwood.</i>
1868	*Cornish-Brown, Charles, Esq. <i>Clifton-lodge, Farguhar-road, Norwood, S.E.</i>
1865	Cornthwaite, Rev. T., M.A. <i>Forest, Walthamstone.</i>
1860	Cornwell, James, Esq., M.D. <i>Purbrook, Crescent-wood-road, Sydenham-hill, S.E.</i>
1839	*Corrance, Frederick, Esq. <i>Parkham-hall, Wickham Market, Suffolk.</i>
1870	Corrie, John, Esq. 42, <i>Lancaster-gate, Hyde-park, W.</i>
1868	Cory, Frederic C., Esq., M.D. <i>Portland-vilki, Buckhurst-hill, Essex; and Nassau-place, Commercial-road, E.</i>
1873	550 Cottrill, Robert Alfred, Esq. <i>Stanwell-house, Stanwell, near Staines.</i>
1869	Coster, Guillaume F., Esq. 11, <i>Park-crescent, Regent's-park, N.W.</i>
1853	*Cosway, William Halliday, Esq. <i>Oxford and Cambridge Club, S.W.</i>
1863	Courtenay, L. W., Esq. <i>British Post-office, Constantinople. Care of R. Wood, Esq., 139, Fleet-street.</i>
1862	Coward, William, Esq. <i>Rock Bank, Lordship-lane, Dulwich, S.E.</i>
1857	*Cowell, Lieut.-Col. Sir J. C., K.C.B., R.E. <i>Buckingham-palace, S.W.</i>

Year of Election.	
1854	Cowley, Norman, Esq. 4, <i>Montagu-place, Montagu-square, W.</i>
1871	Cowper, Charles, Esq., C.M.G. 3, <i>Westminster-chambers, S.W.</i>
1871	Cowper, Henry Aug. (H.M. Com. Puerto Rico). <i>Care of Messrs. Woodhead, 44, Charing-cross, S.W.</i>
1862	*Cowper, Sedgwick S., Esq. 3, <i>Upper Phillimore-place, West Kensington.</i>
1865	560 Coyah, John S., Esq. <i>Levant-house, St. Helen's-place, E.C.</i>
1870	*Cracroft, Bernard, Esq., M.A. Trin. Coll. Camb. <i>Oxford and Cambridge Club, S.W.; and 8, Stville-row, S.W.</i>
1867	Crane, Leonard, Esq., M.D. 7, <i>Albemarle-street, W.</i>
1857	Craufurd, Lieut.-General James Robertson, Grenadier Guards. <i>Travellers' Club, S.W.; and 36, Prince's-gardens, W.</i>
1848	Crawford, Robert Wigram, Esq., M.P. 71, <i>Old Broad-street, E.C.</i>
1866	Crawford, O. J., Esq. <i>Athenæum Club, S.W.</i>
1861	Creswell, Rev. Samuel Francis, B.D., F.R.A.S. <i>Principal of the High School, Dublin.</i>
1873	Creswell, Alf. Aug., Esq. 1, <i>Capel-court, E.C.; and Radford Vicarage, Notts.</i>
1859	*Creyke, Captain Richard Boynton, R.N. <i>Granthorpe-hall, Filey, Yorkshire.</i>
1856	Croker, T. F. Dillon, Esq. 19, <i>Pelham-place, Brompton, S.W.</i>
1864	570 Croll, A. A., Esq., C.E. <i>Southwood, Southwood-lane, Highgate.</i>
1868	Croll, Alex., Esq. <i>Manis Bank, Grange-road, Upper Norwood.</i>
1860	*Croskey, J. Rodney, Esq.
1860	Crosse, Rev. Thomas, D.C.L., M.R.A.S. <i>Hastings</i>
1862	Crossman, James Hiscutt, Esq. <i>Rolls-park, Chigwell, Essex.</i>
1863	*Crowder, Thos. Mosley, Esq., M.A. <i>Thornton-hall, Bedale, Yorkshire.</i>
1852	Crowdy, James, Esq. 17, <i>Serjeants'-inn, E.C.</i>
1872	Cruikshank, Donald, Esq. <i>Junior Naval and Military Club, 19, Dover-street, W.</i>
1859	Cull, Richard, Esq., F.R.A. 13, <i>Turistock-street, Bedford-square, W.C.</i>
1857	Cumming, William Fullarton, Esq., M.D. <i>Athenæum Club, S.W.; and Kinellan, Edinburgh.</i>
1860	580 Cunliffe, Roger, Esq. 24, <i>Lombard-street, E.C.; and 10, Queen's-gate, South Kensington, W.</i>
1853	Cunningham, John Wm., Esq., Sec. King's College. <i>Somerset-house, W.C.; and Harrow, N.W.</i>
1862	*Cunynghame, Lieut.-Gen. Sir A. T., K.C.B. <i>United Service Club, Pall-mall, S.W.</i>
1870	Cunynghame, Sir Edward A., Bart. <i>Army and Navy Club, S.W.</i>
1865	Cure, Capel, Esq. 51, <i>Grosvenor-street, W.</i>
1872	Carling, Lieut. J. Jas., R.E. 10, <i>Stanhope-gardens, South Kensington.</i>
1868	Currie, A. A. Hay, Esq., C.E. <i>The Manor-house, Tunbridge-wells.</i>
1843	*Cursetjee, Manockjee, Esq., F.R.S.N.A. <i>Villa-Byculla, Bombay.</i>
1839	*Curtis, Timothy, Esq.
1872	Cust, Robt. Newtham, Esq. 64, <i>St. George's-square, S.W.</i>
1867	590 Cuttance, John Fras. J., Esq. <i>Cleveland-house, Greville-road, Kilburn, N.W.</i>

Year of Election.	
1872	Czarnikow, Cesar, Esq. 29, <i>Mincing-lane, E.C.</i>
1863	*Dalgety, Fred. G., Esq. 16, <i>Hyde-park-terrace, W.</i>
1864	Dallas, A. G., Esq. 3, <i>Ennismore-gardens, Prince's-gate, S.W.</i>
1870	Dallas, Geo. E., Esq. <i>Foreign-office, S.W.</i>
1865	D'Almeida, W. D., Esq. 19, <i>Green-park, Bath.</i>
1863	Dalrymple, Donald, Esq. <i>Thorpe-lodge, Norwich.</i>
1867	Dalrymple, Geo. Elphinstone, Esq. <i>Logie, Elphinstone, Aberdeenshire.</i>
1868	Dalrymple, R. G. E., Esq.
1857	Dalton, D. Foster Grant, Esq. <i>Shanks-house, near Wincanton, Somerset.</i>
1859	600 Dalyell, Sir Robt. Alex. Osborn, Bart. <i>H.M.'s Consul at Rusehuk, Bulgaria.</i>
1868	Dalziel, William R., Esq. 5, <i>Gresham-park, Brixton, S.</i>
1866	Damer, Lieut.-Col. Lionel S. Dawson. 2, <i>Chapel-street, Grosvenor-square, W.</i>
1838	*Darwin, Charles, Esq., M.A., F.R.S. 6, <i>Queen Anne-street, Cavendish-square, W.</i>
1860	Dasent, John Bury, Esq. 22, <i>Warwick-road, Maida-Hill, W.</i>
1863	Davies, R. H., Esq. Chief Commissioner of Oudh, Lucknow. <i>Care of Messrs. Twining, 215, Strand, W.C.</i>
1873	Davies, W. Hy. Esq. 51, <i>Tregunter-road, South Kensington, W.</i>
1869	*Davies, Robert E., Esq., J.R. <i>Crescent-villa, Kington, near Portsmouth.</i>
1866	Davis, Edmund F., Esq. 6, <i>Cork-street, Bond-street, W.</i>
1866	Davis, Frederick E., Esq. 20, <i>Blandford-square, N.W.</i>
1869	610 Davis, Richard, Esq. 9, <i>St. Helen's-place, E.C.</i>
1861	Davis, Captain John Edward, R.N. <i>Hydrographic-office, Admiralty, S.W.</i>
1846	Davis, Sir John Francis, Bart., K.C.B., F.R.S., F.R.S.N.A. <i>Athenaeum Club, S.W.; and Hollywood, near Bristol.</i>
1840	*Dawnay, The Hon. Pavan. <i>Beningborough-hall, Newton-upon-Ouse, Yorkshire.</i>
1870	Dawson, John Edward, Esq. <i>Oak-lodge, Watford, Herts.</i>
1865	Debary, Rev. Thomas, M.A. 35, <i>Mount-street, W.</i>
1866	Debenham, William, Esq. 15, <i>Gloucester-place, Portman-square, W.</i>
1856	De Crespigny, Lieut. C., R.N.
1865	De Laski, A., Esq.
1869	De Leon, Dr. Hananel. 26, <i>Redcliffe-gardens, West Brompton, S.W.</i>
1868	620 Dell, William, Esq. <i>Messrs. Combe, Delafield, and Co., Long-acre.</i>
1862	Denham, Adm. Sir Henry Mangles, K.C.B., F.R.S. 21, <i>Carlton-road, Maida-vale, W.</i>
1860	Denison, Alfred, Esq. 6, <i>Albemarle-street, W.</i>
1870	Dennias, Colonel Shuckburgh. 30, <i>Duke-street, St. James's, S.W.</i>
1872	*Dent, Alfred, Esq. 12, <i>Hyde-park-gardens, W.</i>
1872	*Dent, Edward, Esq. 12, <i>Hyde-park-gardens, W.</i>
1870	Dentry, J., Esq. <i>Crescent School, Margate.</i>
1871	Dentry, James, Esq. <i>The College, Margate.</i>
353	*Derby, Edward Henry, Earl of, P.C., LL.D., D.C.L. 23, <i>St. James's-square, S.W.; and Knowsley-park, Prescot, Lancashire.</i>
1872	Desmond, Rev. H. M. Egan. 27, <i>Colville-square, W.</i>
1867	630 De Salis, Major-Gen. Rodolph, C.B. 123, <i>Pall-mall, S.W.</i>

Year of Election.	
1853	De Wesselow, Lieut. Fras. G. Simpkinson.
1854	*Devaux, Alexander, Esq. 2, <i>Acenue-road, Regent's-park, N.W.</i>
1857	*Devonshire, William Cavendish, Duke of, LL.D., D.C.L., M.A., F.R.S. <i>Devonshire-house, Piccadilly, W.; and Hardwicke-hall, Derbyshire.</i>
1872	Dhuleep-Singh, His Highness the Maharaja. <i>Elvedon-hall, near Thetford.</i>
1870	Dibdin, Charles, Esq. 62, <i>Torrington-square, W.C.</i>
1870	Dibdin, Robert W., Esq. 62, <i>Torrington-square, W.C.</i>
1864	Dick, A. H., Esq., M.A., LL.D. <i>Free Church Normal College, Glasgow.</i>
1862	Dick, Captain Charles Cramond. <i>Elmwood, Colyford, Axminster, Devon.</i>
1866	*Dick, Fitzwilliam, Esq., M.P. 20, <i>Curzon-street, Mayfair, W.</i>
1861	640 Dick, Robert Kerr, Esq., Bengal Civil Service. <i>Oriental Club, W.</i>
1866	Dick, William Graeme, Esq. 29, <i>Leinster-square, W.</i>
1854	*Dickinson, Sebastian Stewart, Esq., M.P., Barrister-at-Law. 12, <i>Suffolk-street, Pall-mall; and Brown's-hill, Stroud, Gloucestershire.</i>
1830	*Dickinson, Francis Henry, Esq., F.S.A. 119, <i>St. George's-square, Piccadilly, W.; and Kington-park, Somerset.</i>
1852	Dickinson, John, Esq., jun. <i>Athenaeum Club, S.W.</i>
1859	Dickson, A. Benson, Esq. 4, <i>New-square, Lincoln's-inn, W.C.</i>
1860	Dietz, Bernard, Esq., of Algoa Bay. 3, <i>Dorset-square, W.</i>
1859	Digby, G. Wingfield, Esq. <i>Sherborne-castle, Dorset.</i>
1860	Digby, Lieut.-Col. John Almerus. <i>Chalmington-house, Cotteslock, Dorchester.</i>
1869	Digby, Kenelm T., Esq., M.P. <i>Shaftesbury-house, Kensington, S.W.</i>
1859	650 Dilke, Sir Charles Wentworth, Bart., M.P. 76, <i>Stoane-street, S.W.</i>
1856	Dillon, The Hon. Arthur. 17, <i>Clarges-street, W.</i>
1864	Dimadale, J. C., Esq. 50, <i>Cornhill, E.C.; and 52, Cleveland-square, S.W.</i>
1872	Divett, Edwd. Ross, Esq. <i>Reform Club, S.W.</i>
1867	Dix, Thomas, Esq. 10, <i>Amwell-street, W.C.</i>
1872	Dixon, Joseph, Esq. <i>Hillsbro'-hall, Sheffield.</i>
1861	Dixon, Lieut.-Colonel John. 18, <i>Seymour-street, Portman-square.</i>
1857	Dobie, Robert, Esq., M.D., R.N. 7, <i>Houghton-place, Amptill-square, Hampstead-road, N.W.</i>
1854	Dodson, John George, Esq., M.P. 6, <i>Seamore-place, Mayfair, W.</i>
1867	Donald, James, Esq. 5, <i>Duke-street, York-place, Edinburgh.</i>
1858	660 Donne, John, Esq. <i>Instow, North Devon.</i>
1868	Douglas, James A., Esq. <i>The Grange, Coulsdon, near Caterham.</i>
1868	Douglas, John, Esq. <i>Angas-lodge, Portsea.</i>
1870	Douglas, John, Esq. 32, <i>Charing-cross, S.W.</i>
1868	Douglas, Captain N. D. C. F. <i>Guards' Club, S.W.</i>
1871	Douglas, Stewart, Esq. 5, <i>Chester-terrace, Eaton-square, S.W.</i>
1871	Down, J. H. Langdon, Esq., M.D. 39, <i>Welbeck-street, W.; and Normansfield, Hampton Wick.</i>
1833	Doyle, Sir Francis Hastings C., Bart. <i>Custom-house, E.C.</i>
1845	*Drach, Solomon Moses, Esq., F.R.A.S. 74, <i>Offord-road, Barnsbury, N.</i>
1872	*Drew, Frederick, Esq. 24, <i>Eastbourne-terrace, W.</i>

Year of Election.	
1869	670 Drummond, Alfred Manners, Esq. <i>Charing-cross, S.W.</i>
1865	Drummond, E. A., Esq. 2, <i>Brymston-square, W.</i>
1846	Drummond, Lieut.-General John. <i>The Boyce, Dymock, Gloucestershire.</i>
1846	Drury, Captain Byron, R.N. 4, <i>Cambridge-villas, Cheltenham.</i>
1851	*Du Cane, Major Francis, R.E. <i>Brentwood, Essex.</i>
1851	*Ducie, Henry John, Earl of, F.R.S. 16, <i>Portman-square, S.W.</i>
1859	Duckworth, Henry, Esq. <i>Holmfild-house, Algburth, near Liverpool.</i>
1860	*Duff, Mountstuart Elphinstone Grant, Esq., M.P. 4, <i>Queen's-gate-gardens, South Kensington, W.</i>
1868	Duff, Wm. Pirie, Esq. <i>Calcutta. Care of Messrs. John Watson and Co., 34, Finchurch-street, E.C.</i>
1857	*Dufferin, Right Hon. Fredk. Temple Hamilton-Blackwood, Earl of, K.P., K.C.B., F.R.S. 8, <i>Grosvenor-square, and Dufferin-lodge, Fiteroy-park, Highgate, N.</i>
1866	680*Dugdale, Captain Henry Charles G. <i>Merevale-hall, Atherstone, Warwick.</i>
1867	*Dugdale, John, Esq. 1, <i>Hyde-park-gardens; and Llwyn, Llanfyllin, Oswestry.</i>
1868	Dunbar, John Samuel A., Esq. 28, <i>Pembroke-crescent, Bayswater, W.; and 4, Barnard's-inn, Holborn.</i>
1863	Duncan, Capt. Francis, B.A., M.A., F.R.S. 32, <i>The Common, Woobich, S.E.</i>
1861	*Duncan, George, Esq. 45, <i>Gordon-square, W.C.</i>
1840	*Dundas, Right Hon. Sir David, Q.C. 13, <i>King's-Bench-walk, Temple, E.C.; and Ochertyre, Stirling.</i>
1860	Dunell, Henry James, Esq. 12, <i>Hyde-park-square, W.</i>
1859	*Dunlop, R. H. Wallace, Esq., C.B., Indian Civil Service. <i>Northwood, near Rickmansworth, Herts.</i>
1860	*Dunmore, Charles Adolphus Murray, Earl of. 50, <i>Portland-place, W.</i>
1863	Dunn, Captain F. J. A. <i>Portillon, Tours, France; and 4, Cambrian-grove, Gravesend, E.C.</i>
1867	690 Dunraven, Wyndham Thos., Earl of. <i>Clearwell-court, Coleford, Gloucestershire.</i>
1856	Duprat, Le Vicomte. <i>Consul-Général de Portugal, 46, Palace-gardens-terrace, Kensington, W.</i>
1869	Durham, Edward, Esq. <i>Beauchamp-house, Kibworth, near Leicester.</i>
1852	D'Urban, Major-Gen. W. J. <i>U. S. Club, S.W.; and Newport, near Exeter.</i>
1865	*Dutton, F. S., Esq. <i>Reform Club, S.W.; and Adelaide, Australia.</i>
1868	Dutton, Frederick H., Esq. 45, <i>Dover-street, W.</i>
1870	Dymes, Daniel David, Esq., <i>Windham Club, S.W.; and 9, Mincing-lane, E.C.</i>
1872	Eade, Isaac Broad, Esq., M.A., &c. <i>Kimberley-house, Falmouth.</i>
1856	Eardley-Wilmot, Major-Gen. F., M.B.A. 22, <i>Victoria-rd., Clapham-common, S.W.</i>
1871	Earle, Arthur, Esq. <i>Childwall-lodge, Watertree, near Liverpool; and Windham Club, S.W.</i>
1869	700 Eastwick, Edward B., Esq., F.R.S., M.P. 38, <i>Thurloe-square, Brompton, S.W.</i>

Year of
Election.

- 1857 Eastwick, Captain W. J. 12, *Leinster-terrace, Hyde-park, W.*
- 1863 Eaton, F. A., Esq. *New Unicorny Club, St. James's-street, S.W.*
- 1862 *Eaton, H., Esq. 16, *Prince's-gate, Hyde-park, W.*
- 1862 *Eaton, Henry William, Esq., M.P. 16, *Prince's-gate, Hyde-park, W.*
- 1864 *Eaton, William Meriton, Esq., 16, *Prince's-gate, Hyde-park, W.*
- 1866 Eatwell, Surgeon-Major W. C. B., M.D. *Oriental Club, Hanover-square, W.*
- 1861 Eber, General F. 33, *St. James's-square, S.W.*
- 1862 Ebury, Lord. 107, *Park-street, Grosvenor-square, W.; and Moor-park, Herts.*
- 1872 Eddy, C. W., Esq. 7, *Queen's-gate-terrace, W.*
- 1862 710 Eden, Vice-Admiral Charles, C.R. 20, *Willon-place, S.W.*
- 1858 Edge, Rev. W. J., M.A. *Benenden-vicarage, near Staplehurst, Kent.*
- 1863 Edgeworth, M. P., Esq., BENG. C.B. *Mustrin-house, Anerley, S.*
- 1867 *Edward, James, Esq. *Balruldery, by Dundee, N.B.*
- 1866 *Edwarles, Thomas Dyer, Esq. 5, *Hyde-park-gate, Kensington, W.*
- 1871 *Edwardes, Thomas Dyer, Esq., jun. 5, *Hyde-park-gate, Kensington.*
- 1871 Edwards, James Lyon, Esq. 7, *The Avenue, Belsize-park, Hampstead, N.W.*
- 1868 Edwards, Rev. A. T., M.A. 39, *Upper Kennington-lane, S.*
- 1865 Edwards, G. T., Esq., M.A. *Decon-lodge, Alexandra-road, N.W.*
- 1861 *Edwards, Henry, Esq., M.P. 53, *Berkeley-square, W.*
- 1860 720 Edwards, Major J. B., R.E. *United Service Club, S.W. Care of Messrs. H. S. King and Co., 65, Cornhill, E.C.*
- 1853 Egerton, Captain the Hon. Francis, R.N., M.P. *Devonshire-house, S.W.; and H.M.S. 'St. George.'*
- 1868 Elder, A. L., Esq. *Carlisle-house, Hampstead.*
- 1863 *Elder, George, Esq. *Knock-castle, Ayrshire.*
- 1867 Eley, Charles John, Esq. *Old Brompton, S.W.*
- 1863 Elias, Ney, jun., Esq. 64, *Inverness-terrace, Bayswater, W.*
- 1870 Ellenborough, Lord. *Holly Spring, Bracknell, Berks.*
- 1860 Elliot, G., Esq., M.P., C.E. *The Hall, Houghton-le-Spring, near Fence Houses, Durham.*
- 1857 *Elliot, Capt. L. R. *La Mailleraye-sur-Seine, Seine Inférieure. Care of J. L. Elliot, Esq., 10, Connaught-place, W.*
- 1871 Elliot, William, Esq. 2, *De Crespigny-terrace, Denmark-hill, Camberwell, S.*
- 1830 730 *Elliot, Rev. Charles Boileau, M.A., F.R.S. *Tattingstone, Suffolk.*
- 1865 Ellis, W. E. H., Esq. *Hazfield-rectory, Gloucester; Oriental Club, W.; and Byculla Club, Bombay.*
- 1871 Ellis, Walter J., Esq. 102, *Harley-street, Cavendish-square, W.*
- 1858 Elphinstone, Major Sir Howard C., R.E., K.C.B., V.C., C.M.G. *Buckingham-palace, S.W.*
- 1869 Elsey, Colonel William. *West-lodge, Ealing, W.*
- 1857 Elton, Sir A. H., Bart. *Athenæum Club, S.W.; and Cleckdon-court, Somersetshire.*
- 1872 Elwell, W. R. G., Esq. 8, *Beverley-road, South Pease-park, S.E.*
- 1868 Ely, John Henry Wellington Graham Loftus, Marquis of. *Rathfriland Castle, Dublin.*

Year of Election.	
1862	*Emanuel, Harry, Esq. 11, <i>Hyde-park, Gardens, S.W.</i>
1863	Emalle, John, Esq. 47, <i>Gray's-inn-road, W.C.</i>
1830	740 Enderby, Charles, Esq., F.R.S., F.L.S. 13, <i>Great St. Helen's, E.C.</i>
1860	Enfield, Edward, Esq., F.S.A. 19, <i>Chester-terrace, Regent's-park, N.W.</i>
1863	Engleheart, Gardner D., Esq. <i>Galton-cottage, Reigate.</i>
1870	Erskine, Claude J., Esq., Bombay Civil Service. 87, <i>Harley-street, W.; and Athenæum Club, S.W.</i>
1852	Erskine, Admiral John Elphinstone, M.P., C.B. <i>H.M.S. 'Edgar;' 1 L, Albany, W.; and Cardross, Stirling, N.B.</i>
1857	*Esmeade, G. M. M., Esq. 29, <i>Park-street, Grosvenor-square, W.</i>
1872	Espinosa, Don Juan (Baron de Eldenburg). <i>Plaza del Inquisicion, Lima, Peru.</i>
1865	Evans, Colonel William Edwyn. 55, <i>Seymour-street, Portman-square, W.</i>
1870	*Evans, Edward Bickerton, Esq. <i>Whitbourne-hall, near Worcester.</i>
1857	Evans, Staff-Captain F. J., R.N., F.R.S., F.R.A.S. 116, <i>Victoria-street, S.W.</i>
1830	750*Evans, Vice-Admiral George. 1, <i>New-street, Spring-gardens, S.W.; and Englefield-green, Staines.</i>
1870	Evans, Lieut.-Colonel Henry Lloyd. 14, <i>St. James's-square, S.W.</i>
1857	Evans, Thos. Wm., Esq. 1, <i>Dartmouth-street, Westminster, S.W.; and Allestree-wall, Derby.</i>
1830	*Evans, W., Esq.
1867	Evans, W. Herbert, Esq. 32, <i>Hertford-street, Mayfair, W.</i>
1861	Evelyn, Lieut.-Colonel George P. 34, <i>Onslow-gardens, Brompton, S.W.</i>
1851	*Evelyn, William J., Esq., F.S.A. <i>Evelyn Estate-office, Evelyn-street, Deptford.</i>
1830	*Everett, James, Esq., F.S.A.
1865	Everitt, George A., Esq. <i>Knowle-hall, Warwickshire.</i>
1873	Ewart, John, Esq. 7, <i>Launcester-street, Hyde-park, W.</i>
1856	760 Ewing, J. D. Crum, Esq. 3, <i>Line-street-square, E.C.</i>
1857	Eyre, Edward J., Esq.
1861	Eyre, George E., Esq. 59, <i>Locandis-square, Brompton, S.W.</i>
1856	Eyre, Major-Gen. Sir Vincent, K.C.B. <i>Athenæum Club, S.W.; and 33, Thurloe-square, S.W.</i>
1871	Eyton, Wm. Campbell, Esq. <i>Care of Messrs. Peels and Peels, Shrewsbury.</i>
1861	Fairbairn, Sir William, Bart., C.E., F.R.S. <i>Manchester.</i>
1870	Fairbridge, Charles, Esq., Queen's Proctor. <i>Court of Vice-Admiralty, Cape Town.</i>
1869	Fairfax, Captain Henry, R.N. <i>Army and Navy Club, S.W.</i>
1856	Fairholme, George Knight, Esq. <i>Care of Mr. Ridgway, 169, Piccadilly, W.</i>
1870	Fairland, Edwin, Esq., M.D. (Surg. 21st Hussars). <i>Lucknow, Oude.</i>
1838	770 Falconer, Thomas, Esq. <i>Ust, Monmouthshire.</i>
1868	Falconer, William, Esq. 23, <i>Lesdenhall-street, E.C.; and 42, Hilldrop-road, Camden-new-town, N.</i>
1857	Falkland, Lucius Bentinck, Viscount. <i>Stutterbelfe, Yorkshire.</i>
1871	Fane, Edward, Esq. 14, <i>St. James's-square, S.W.</i>
1855	*Fanshawe, Admiral E. G. 63, <i>Eaton-square, S.W.</i>

Year of
Election

- 1868 *Farquharson, Lieut.-Col. G. M.B. *Care of Messrs. King and Co., Cornhill, E.C.*
- 1863 *Farrer, W. Jas., Esq. 18, *Upper Brook-street, W.*
- 1863 *Faunthorpe, Rev. J. P., M.A. *Training-college, Battersea.*
- 1869 Fawcett, Captain Edward Boyd, M.A. 8, *Windsor-crescent, St. Helier's, Jersey.*
- 1869 Fawcett, Henry, Esq. *Wainsford, Lymington.*
- 1863 780*Fayrer, Joseph, Esq., M.D. *Calcutta. Care of General Spens, 4, Rosslyn-street, Pilrig, Edinburgh.*
- 1858 Fazakerley, J. N., Esq. 6, *South Eaton-place, S.W.*
- 1866 Felkin, William, Esq., jun., F.Z.S. *Beeston, near Nottingham.*
- 1872 Fenner, William, Esq. *Thatched House Club, St. James's-street, S.W.; and 3, Den-crescent, Teignmouth, South Devon.*
- 1840 *Fergusson, James, Esq., F.R.S., D.C.L. 20, *Langham-place, W.*
- 1860 Ferro, Don Ramon de Silva.
- 1871 Festing, Captain Robert, R.E. *South Kensington Museum, S.W.*
- 1865 Field, Hamilton, Esq. *Thornton-lodge, Thornton-road, Clapham-park.*
- 1844 Findlay, Alex. George, Esq. 53, *Fleet-street, E.C.; and Dulwich-wood-park, S.*
- 1862 Flials, Thomas Quedsted, Esq., Alderman. *Wanstead, Essex, N.E.*
- 1870 790*Firth, John, Esq., J.P. *Care of J. W. Firth, Esq., 2, Gresham-place, Lombard-street, E.C.*
- 1863 Fisher, John, Esq. 60, *St. James's-street, S.W.*
- 1869 Fitch, Frederick, Esq., F.R.M.S. *Indleigh-house, Highbury-new-park, N.*
- 1857 *Fitzclarence, Commander the Hon. George, R.N. 1, *Warwick-square, S.W.*
- 1873 Fitz-James, Frank, Esq., C.E. 6, *Stanhope Terrace, Gloucester-road, S.W.*
- 1861 Fitzgerald, Captain Keane. 2, *Portland-place, W.*
- 1872 Fitzgerald, A., Esq. *Junior St. James's Club, 74, St. James's-street, S.W.*
- 1864 Fitzpatrick, Lieut. Francis Skelton, 42nd Regiment, *Madras Army.*
- 1857 Fitzwilliam, The Hon. C. W., M.P. *Brookes's Club, St. James's-street, S.W.*
- 1837 *Fitzwilliam, William Thomas, Earl. 4, *Grosvenor-square, W.; and Wentworth-house, Rotherham, Yorkshire.*
- 1865 800*Fitzwilliam, William S., Esq. 28, *Ovington-square, Brompton, S.W.*
- 1863 Fleming, G., Esq. *Brompton Barracks, Chatham.*
- 1861 *Fleming, John, Esq. 18, *Leadenhall-street, E.C.*
- 1865 Fleming, Rev. T. S. *The Vicarage, St. Clement's, Leeds.*
- 1853 *Flemyng, Rev. Francis P. *Lensie, Glasgow.*
- 1862 Fletcher, John Charles, Esq. *Dale-park, Arundel; and Eaton-place, S.W.*
- 1857 Fletcher, Thomas Keldey, Esq. *Union-dock, Limehouse, E.*
- 1866 Flood, John Edwin, Esq.
- 1864 Flower, Capt. L.
- 1863 Foley, Major-Gen. the Hon. St. George, C.B. 24, *Bolton-street, W.*
- 1861 810 Foord, John Bromley, Esq. 32, *Old Broad-street, E.C.*
- 1860 Forbes, Commander Charles S., R.N. *Army and Navy Club, S.W. Care of Messrs. Woodhead.*
- 1863 Forbes, Capt. C. J. F. Smith.

Year of
Election.

- 1867 Forbes, Geo. Edward, Esq. Colinton, Ipswich, Queensland; care of Messrs. Edmborough and Co., 54, Moorgate-street, E.C.; Union Club, S.W.; 11, Melville-street, Edinburgh; New Club, Edinburgh.
- 1872 Forbes, Henry, Esq. Angerston Grange, near Uley, Gloucestershire.
- 1872 Forbes, James G. T. Esq., Staff-Surgeon R.N. Royal Hospital, Greenwich.
- 1860 Forbes, Lord, M.A. Castle Forbes, Aberdeenshire.
- 1869 Ford, Col. Barnett (Governor of the Andaman Islands). 48, Upper-park-road, Hampstead.
- 1872 *Forrest, Alex. Esq., Survey Department of Perth. Western Australia. Care of Messrs. Baker and Oliphant, 37, Walbrook, E.C.
- 1872 *Forrest, John, Esq., Assistant-Surveyor. Perth, Western Australia. Care of Messrs. F. P. Baker and Oliphant, 27, Walbrook, E.C.
- 1868 820 Forster, Hon. Anthony. Newsham-grange, Winstan, Darlington, Durham.
- 1839 *Forster, Right Hon. William Edward, M.P. 80, Eccleston-square, S.W.; and Barley, near Otley.
- 1867 Forsyth, T. Douglas, Esq., C.B. (R.C.S.), Commissioner, Jullundur, Punjab. Care of Messrs. Sinclair, Hamilton, and Co., 17, St. Helen's-place, E.C.
- 1861 Forsyth, William, Esq., M.P., Q.C. 61, Rutland-gate, S.W.
- 1858 Fortescue, Right Hon. Chichester S., M.P. 7, Carlton-gardens, S.W.
- 1861 *Fortescue, Hon. Dudley F., M.P. 9, Hertford-street, Mayfair, W.
- 1873 Foss, G. Lush, Esq. Ivy House, Southville, Bristol.
- 1869 Foster, Ebenezer, Esq. 19, St. James's-place, St. James's, S.W.
- 1866 Foster, Edmond, jun., Esq. 79, Portofino-road, Maida-vale, W.
- 1864 Foster, H. J., Esq.
- 1871 830 Foster, James Murray, Esq., L.M.D., F.R.C.P., F.S.A., &c. Nazeeah, Assam. Bengal. Care of Joseph Foster, Esq., Cullompton, Devon.
- 1863 *Fowler, J. T., Esq. Government Inspector of Schools, Adyar, Madras, India. Care of Rev. A. Wilson, National Society's Office, Sanctuary, Westminster.
- 1872 *Fowler, John, Esq., C.E. Thornwood Lodge, Camden-hill, W.
- 1850 *Fowler, Robert N., Esq., M.P., M.A. 30, Cornhill, E.C.; and Tottenham, N.
- 1859 Fox, Lieut.-Colonel A. Lane. 10, Upper Phillimore-gardens, Kensington, W.
- 1866 Fox, D. M., Esq., Chief Engineer of the Santos and St. Paulo Railway. St. Paulo, Brazil.
- 1864 *Fox, Francis E., Esq., B.A. Falmouth.
- 1863 Fox, Samuel Crane, Esq. 31, Cambridge-gardens, Notting-hill, W.
- 1863 *Franks, Aug. W., Esq. 103, Victoria-street, S.W.
- 1860 Franks, Charles W., Esq. 2, Victoria-street, S.W.
- 1862 840 Fraser, Captain H. A., L.N. Zanzibar. Care of Messrs. Grindlay.
- 1866 Fraser, Captain T. Otajo, New Zealand.
- 1868 Frater, Alexander, Esq. Canton. Care of James Frater, Esq., Town-house, Aberdeen.
- 1869 Freke, Thomas George, Esq. 1, Cromwell-houses, Kensington, W.
- 1868 Freeman, Henry W., Esq. Junior Athenæum Club, S.W.
- 1863 Fremantle, Captain Edmund Robert, R.N. 4, Upper Eccleston-street, S.W.
- 1856 Fremantle, Right Hon. Sir Thomas F., Bart. 20, Eaton-place, S.W.

Year of
Election.

- 1864 Fremre, Major James H. *Wrentnall-house, Shropshire; and Army and Navy Club, S.W.*
- 1872 French, Colonel P. F. 14, *St. James's-square, S.W.*
- 1850 Frere, Bartle John Laurie, Esq. 45, *Bedford-square, W.C.*
- 1839 850* Frere, George, Esq. 16, *Great College-street, S.W.*
- 1867 Frere, Sir Hy. Bartle Edw., K.C.B., G.C.S.I. *Wressil-lodge, Wimbled., Surrey; and 22, Prince's-gardens, W.*
- 1842 Frere, William Edw., Esq., F.R.A.S. *The Rectory, Bitton, Gloucestershire.*
- 1869 *Freshfield, Douglas W., Esq. 6, *Stanhope-gardens, South Kensington, W.; and United University Club, S.W.*
- 1873 *Freshfield, W. Dawes, Esq. 64, *Westbourne-terrace, W.*
- 1872 Friedrichsen, Aug. Daniel, Esq. 76, *Jermyn-street, S.W.*
- 1863 Fuidge, William, Esq. 3, *Park-row, Bristol.*
- 1855 Fuller, Thomas, Esq. 119, *Gloucester-terrace, Hyde-park, W.; United University Club, S.W.*
- 1860 Fussell, Rev. J. G. Curry. 16, *Coloan-place, S.W.; and Killoshane-castle, Templemore, Ireland.*
- 1868 Fyfe, Andrew, Esq., M.D. 112, *Brompton-road, S.W.*
- 1868 860 Fytche, Major-Gen. Albert, C.S.I. 21, *Loxnes-square, S.W.; and Reform Club, S.W.*
- 1863 *Gabrielli, Antoine, Esq. 6, *Queen's-gate-terrace, Kensington, W.*
- 1858 Gaisford, Thomas, Esq. *Travellers' Club, S.W.*
- 1872 Gale, Henry, Esq., C.E. 9, *Little Stanhope-street, Mayfair, W.*
- 1855 *Galloway, John James, Esq.
- 1869 Galsworthy, Frederick Thomas, Esq. 8, *Queen's-gate, Hyde-park, W.*
- 1873 Galsworthy, Robt. Herbert, Esq. 61, *Gloucester-place, Portman-square, W.*
- 1848 *Galton, Captain Douglas, R.E. 12, *Chester-street, Grosvenor-place, S.W.*
- 1850 *Galton, Francis, Esq., M.A., F.R.S. 42, *Entland-gate, S.W.; and 3, Eartie-terrace, Leamington.*
- 1871 Galton, Theodore Howard, Esq. 78, *Queen's-gate; and Hadzor-ho., Droichead.*
- 1854 870* Gammell, Major Andrew. *Drumtochty, Kincardineshire, N.B.*
- 1873 *Gardiner, H. J., Esq. 6, *Orsett-terrace, Westbourne-terrace, W.*
- 1869 Gardner, Christopher T., Esq. 3, *St. James's-terrace, Paddington, W.*
- 1865 Garner, Captain G. H., R.N. 7, *Junco-street, Westbourne-terrace, W.*
- 1866 Gardner, John Dunn, Esq. 19, *Park-street, Park-lane, W.*
- 1863 Gascoigne, Frederic, Esq. *Parlington, Yorkshire.*
- 1859 *Gassiot, John P., jun., Esq. 6, *Sussex-place, Regent's-park, N.W.*
- 1866 Gastrell, Lieut.-Col. James E. (B. Staff Corps). *Surveyor-General's Office, Calcutta. Care of H. T. Gastrell, Esq., 36, Lincoln's-inn-fields, W.C.*
- 1866 *Gatty, Charles H., Esq., M.A., *Felbridge-park, East Grinstead, Sussex.*
- 1873 Gawler, Colonel J. C. *Tower of London, E.C.*

Year of Election.	
1870	380* Gellatly, Edward, Esq. <i>Uplands, Sydenham.</i>
1865	George, Rev. H. B. <i>New College, Oxford.</i>
1859	Gerstenberg, Isidore, Esq. <i>Stockley-house, North-jate, Regent's-park, N.W.</i>
1866	*Gibb, George Henderson, Esq., 13, <i>Victoria-street, Westminster, S.W.</i>
1865	*Gibbons, Alderman Sir Sills John, Bart. <i>Calvert's-buildings, 17, Southwark-street, S.E.</i>
1859	*Gibbs, H. Hucks, Esq. <i>St. Dunstan's, Regent's-park, N.W.</i>
1870	Gibson, James Y., Esq. <i>Edinburgh. Care of Messrs. Williams and Norgate.</i>
1855	Gibraltar, Right Rev. and Hon. C. A. Harris, Bishop of. <i>Gibraltar Palace, Malta.</i>
1855	Gillespie, Alexander, Esq. <i>Heathfield, Walton-on-Thames, Surrey.</i>
1866	*Gillespie, William, Esq. (of <i>Torbans-hill</i>). 46, <i>Melville-street, Edinburgh.</i>
1868	290* Gillett, Alfred, Esq. 60, <i>Eaton-square, S.W.</i> ; and <i>Danbury, Oxon.</i>
1863	*Gillett, William, Esq. 3 C, <i>Albany, W.</i>
1861	Gilliat, Alfred, Esq.
1868	Gilliat, Algernon, Esq. <i>Fernhill, near Windsor.</i>
1863	Gilles, Robert, Esq., C.E. <i>Dunedin, Otago, New Zealand.</i>
1864	Gladstone, George, Esq. 35, <i>Ventnor-Villas, Cliftonville, Brighton.</i>
1863	Gladstone, J. H., Esq., F.R.D.R. 17, <i>Pembroke-square, W.</i>
1862	*Gladstone, Robert Stuart, Esq.
1846	*Gladstone, William, Esq. 574, <i>Old Broad-street, E.C.</i>
1864	*Gladstone, W. K., Esq. 39 A, <i>Old Bond-street, W.</i> ; and <i>Fitzroy-park, Highgate, N.</i>
1873	900 Glanville, Silvanus Young, Esq. 52, <i>Threadneedle-street, E.C.</i>
1872	Glass, James George Henry, Esq. 28, <i>London-street, Edinburgh. Care of Messrs. King and Co., 45, Pall-mall, S.W.</i>
1867	Glass, H. A., Esq. 4, <i>Gray's-inn-square, W.C.</i>
1857	Gleig, Rev. G. R., M.A. <i>Chaplain-General, Chelsea-hospital, S.W.</i>
1854	Glen, Joseph, Esq., Mem. Geogr. Soc. of Bombay. <i>Oriental Club, W.</i>
1857	Glover, Commr. John H., R.N. <i>Lagos</i> ; and <i>Army and Navy Club, S.W.</i>
1866	Glover, Robert Reaveley, Esq. 30, <i>Great St. Helen's, E.C.</i>
1870	Glover, Colonel T. G., R.E. <i>Barwood, Hereham, near Esher, Surrey.</i>
1864	Glyn, Sir Richard George, Bart. <i>Army and Navy Club, S.W.</i>
1869	Goldney, G. Esq., M.P. 40, <i>Hill-street, Berkeley-square, W.</i>
1868	910 Goldsmid, Sir Francis, Bart., M.P. <i>Inner-circle, Regent's-park, N.W.</i>
1863	Goldsmid, Maj.-Gen. Sir Frederic John, K.C.S.I., C.B. 1, <i>Southwell-gardens, South Kensington</i> ; and <i>United Service Club, S.W.</i>
1861	Goldsmid, Julian, Esq. 42, <i>Grosvenor-street, S.W.</i>
1868	Goldsworthy, Major W. T. <i>British Service Club, 4, Park-place, St. James's, S.W.</i>
1860	Gooch, Thomas Longridge, Esq. <i>Team-lodge, Saltwell, Gateshead-on-Tyne.</i>
1864	Goodall, George, Esq. <i>Messrs. Cox and Co., Craig's-court</i> ; and <i>Junior Carlton Club, W.</i>
1863	*Goodenough, Captain J. G., R.N. <i>United Service Club, S.W.</i>
1864	*Goodenough, Lieut.-Col., R.A. <i>Care of Messrs. Cox and Co., Craig's-court, S.W.</i>

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1871	*Goodwin, William, Esq. <i>Cloughton-park, near Birkenhead.</i>
1865	*Gooblen, Charles, Esq. <i>United University Club, S. W.</i>
1861	920 Gooldin, Joseph, Esq. 18, <i>Lancaster-gate, W.</i>
1856	*Gordon, Lieut.-General the Hon. Alexander H., C.B. 50, <i>Queen's-gate-gardens, South Kensington, W.</i>
1870	Gordon, Russell Manners, Esq. 33, <i>Alpha-road, St. John's-wood, N. W.</i>
1866	Gore, Augustus F., Esq., Colonial Secretary. <i>Demerara.</i>
1853	Gore, Richard Thomas, Esq. 6, <i>Queen-square, Bath.</i>
1859	Goaling, Fred. Solly, Esq. 23, <i>Spring-gardens, S. W.</i>
1862	Goss, Samuel Day, Esq., M.D. 111, <i>Kennington-park-road, S.</i>
1870	Gottlieb, Felix Henry, Esq., J.R. <i>Garden-court, Temple, E.C.; and 16, Colcherno-road, West Brompton, W.</i>
1868	Gough, Hugh, Viscount, F.L.S. <i>Lough Cutra Castle, Gort, Co. Galway.</i>
1835	Gould, Lieut.-Colonel Francis A. <i>Buntingford, Herts.</i>
1846	930 Gould, John, Esq., F.R.S., F.L.S. 26, <i>Charlotte-street, Bedford-square, W.C.</i>
1870	Gould, Rev. Robert John. <i>Stratfield Mortimer, near Reading.</i>
1872	Gourley, Colonel E., M.R. <i>Care of J. J. Stephens, Esq., 1, St. Mary-axe, E.C.</i>
1872	Gowlland, John Thomas, Esq. <i>Navigating Lieutenant, Admiralty Survey, Sydney, New South Wales. Care of Captain Davis, Hydrographic-office, Admiralty, S. W.</i>
1867	Grabham, Michael, Esq., M.D. <i>Madeira. Care of C. R. Blandy, Esq., 25, Crutched-friars, E.C.</i>
1863	Graeme, H. M. S., Esq.
1869	Graham, Andrew, Esq., Staff Surg. R.N. <i>Army and Navy Club, S. W.</i>
1858	Graham, Cyril C., Esq. 9, <i>Cleveland-row, St. James's, S. W.; and Debroe-house, Watford, Herts.</i>
1868	*Graham, Thomas Cuninghame, Esq. <i>Carlton Club, S. W.; and Dunlop-house, Ayrshire.</i>
1871	Graham, J. C. W. Paul, Esq. 1, <i>Carlisle-place, Victoria-street, S. W.; and Brooker's Club, St. James's-street, S. W.</i>
1870	940*Grant, Andrew, Esq. <i>Oriental Club, Hanover-square, W.</i>
1863	*Grant, C. Mitchell, Esq. 15, <i>George-street, Hanover-square.</i>
1861	Grant, Daniel, Esq.
1865	*Grant, Francis W., Esq. <i>Army and Navy Club, S. W.</i>
1860	Grant, Lieut.-Col. James A., C.B., C.S.I. <i>H. India U. S. Club, S. W.; and 7, Park-square, Regent's-park, N. W.; and Bahvil, Dinypall, N.B.</i>
1867	Graves, Rev. John. <i>Underbarrow-parsonage, Milnthorpe, Westmoreland.</i>
1872	Gray, Andrew, Esq. 1, <i>Line-street-square, E.C.</i>
1870	Gray, Charles W., Esq. 19, <i>Regent's-park-road, N. W.</i>
1871	Gray, Mathew, Esq. <i>St. John's-park, Blackheath, S.E.</i>
1830	*Gray, John Edw., Esq., PH. DR., F.R.S., Z.S. and L.S. <i>British Museum, W.C.</i>
1868	950 Gray, Lieut.-Col. William, M.R. 26, <i>Prince's-gardens, W.; and Darcy Lever-hall, near Bolton.</i>
1862	Greathed, Lieut.-Colonel Willerforce, W. H., C.B. 7, <i>Queen-street, Mayfair, W.</i>

Year of
Election.

- 1863 Greaves, Rev. Richard W. 1, *Whitehall-gardens, S. W.*
- 1861 Green, Captain Francis, 58th Regiment.
- 1871 Green, John Henry, Esq. 8, *Weighton-road, South Pease-park, S.E.*
- 1871 Green, Joseph E., Esq. 12A, *Myddelton-square, E.C.*
- 1868 Green, Rev. W., M.A. *Chaplain to the Tower of London.*
- 1869 Green, Colonel Sir W. H. R., K.C.S.I., C.B. 36, *St. George's-road, Eccleston-square, S. W.*
- 1871 Greene, Captain John Clinton, R.A.
- 1830 Greene, Thomas, Esq. *Whittington-hall, near Burton, Westmoreland.*
- 1837 960* Greenfield, W. B., Esq. 39, *Porchester-terrace, Hyde-park, W.; and Union Club, S. W.*
- 1870 Greenup, W. Thomas, Esq. *Woolhead-road, London-road, Sheffield.*
- 1871 Greg, Thomas, Esq. 8, *Eaton-square, S. W.*
- 1865 Greg, W. R., Esq., Comptroller of H.M.S. Stationery Office. *Wimbledon, S. W.*
- 1858 *Gregory, Augustus Charles, Esq. *Surveyor-General, Brisbane, Queensland, Australia.*
- 1858 Gregory, Charles Hutton, Esq., C.E. 1, *Delahay-street, Westminster, S. W.*
- 1860 *Gregory, Francis Thomas, Esq. *Queensland.*
- 1858 *Gregory, Isaac, Esq. *Merchants'-college, Blackpool.*
- 1872 Gregson, George, Esq. 26, *Harley-street, Cavendish-square, W.*
- 1837 *Grellet, Henry Robert, Esq. *Care of L. Mentzendorff, Esq., 87, Great Tower-street, E.C.*
- 1865 970 Grenfell, Henry R., Esq., M.P. 15, *St. James's-place, S. W.*
- 1830 *Greswell, Rev. Richard, M.A., F.R.S. 39, *St. Giles's-street, Oxford.*
- 1866 Grey, Charles, Esq. 13, *Carlton-house-terrace, S. W.*
- 1837 *Grey, Sir George, K.C.B. *Grosvenor-mansions, S. W.*
- 1864 Grierson, Charles, Esq. *Care of W. Grierson Jackson, Esq., 12, Surrendale-place, Sutherland-gardens, W.*
- 1868 Griffin, Daniel, Esq. 18, *Leadenhall-street, E.C.*
- 1862 Griffin, James, Esq. 2, *Eastern-parade, Southsea; and The Hard, Portsmouth, Hants.*
- 1861 *Griffith, Daniel Clewin, Esq. 20, *Gower-street, W.C.*
- 1839 Griffith, John, Esq. 16, *Finchbury-place-south, E.C.*
- 1863 Griffith, Sir Richard. *Henderoyde-park, Kelso, N.B.*
- 1836 980 Griffith, Richard Clewin, Esq. 20, *Gower-street, W.C.*
- 1872 Griffiths, Arthur Edward, Esq. 25, *Tulbot-square, Hyde-park, W.*
- 1867 Griffiths, Captain A. G. F., 63rd Reg. (Major of Brigade, Gibraltar). *St. Mary's-vaile, Chatham.*
- 1869 Griffiths, William, Esq., J.P. 24, *Great Cumberland-place, W.; and The Welkin, Litchfield, Sussex.*
- 1855 Grindrod, R. D., Esq., M.D., LL.D., F.R.S., &c. *Townsend-house, Malvern.*
- 1872 Grinton, J. J., Esq. *Columbo, Ceylon. Care of Edward Woods, Esq., C.E., 3, Storey's-gate, Westminster, S. W.*
- 1861 Grosvenor, Lord Richard, M.P. 33, *Upper Grosvenor-street, W.*

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Election.

- 1857 Gruneisen, Charles Lewis, Esq. 16, *Surrey-street, Strand, W.C.*
- 1861 Gunnell, Captain Edmund H., R.N. *Army and Navy Club, S.W.; and 21, Argyll-road, Campden-hill, W.*
- 1859 *Gurney, John H., Esq. *Marldon, Totnes.*
- 1857 990 Gurney, Samuel, Esq. 20, *Hamover-terrace, Regent's-park, N.W.*
- 1872 *Gwynne, James Eglinton, W., Esq., C.E., F.S.A., J.P., &c. 97, *Harley-street, W.; and Cliff-house, Doter-court, Essex.*
- 1865 Gwyther, John H., Esq. *Meadowcroft, Lower Sydenham, S.E.*
- 1870 Habicht, Claudius Edward, Esq. 33, *Eaton-square, S.W.*
- 1863 Hadfield, William, Esq. 11, *Interness-road, W.*
- 1865 Hadley, Henry, Esq., M.D. *Needwood-lodge, Bay's-Hill, Cheltenham.*
- 1863 Hadow, P. D., Esq. *Sudbury-priory, Middleser.*
- 1865 Halcombe, Rev. J. J. *Charterhouse, E.C.*
- 1868 Hale, Rev. Edward, M.A. *Eton College; and United University Club, S.W.*
- 1860 Halkiday, Lieut.-Colonel William Robert. *United Service Club, S.W.*
- 1853 1000 Hallifax, Viscount, G.C.B. 10, *Belgrave-sq., S.W.; and Hickleton, Yorkshire.*
- 1853 *Halkett, Rev. Dunbar S. *Little Bookham, Surrey.*
- 1853 *Halkett, Lieut. Peter A., R.N.
- 1853 Hall, Admiral Sir William Hutcheson, K.C.B., F.R.S. *United Service Club, S.W.; and 48, Phillimore-gardens, Kensington, W.*
- 1871 Hall, Captain Robert, R.N., G.B. *Pembroke-dockyard.*
- 1861 Hall, Charles Hall, Esq. *Wateryale-house, Linsworth.*
- 1863 Hall, Henry, Esq. 109, *Victoria-street, S.W.*
- 1862 Hall, James Tebbutt, Esq. *Fore-street, Limehouse, E.*
- 1869 *Hall, James MacAlester, Esq. 15, *Woodside-crescent, Glasgow.*
- 1863 Hall, Thomas F., Esq., F.C.S. 29, *Warwick-square, S.W.*
- 1865 1010 Hallett, Lieut. Francis C. H., R.N.A.
- 1858 Halloran, Arthur B., Esq. 3, *Albert-terrace, St. Leonard's, Exeter.*
- 1872 *Halpin, Capt. R. C. 38, *Old Broad-street, E.C.*
- 1871 *Hamilton, Andrew, Esq., Lieut. 102nd Regiment. *The House of Falkland, Fyfe; and Naval and Military Club, W.*
- 1862 Hamilton, Archibald, Esq. *South Barrow, Bromley, Kent, S.E.*
- 1861 Hamilton, Lord Claude, M.P. 19, *Eaton-square, S.W.; and Barons-court, County Tyrone.*
- 1830 *Hamilton, Captain Henry G., R.N. 71, *Eccleston-square, S.W.*
- 1869 Hamilton, Captain Richard Vesey, R.N. *H.M.S. 'Achilles,' Portland.*
- 1861 Hamilton, Col. Robert William, Grenadier Guards. 103, *Eaton-square, S.W.*
- 1863 Hamilton, Rowland, Esq. *Oriental Club, W.*
- 1830 1020 Hamilton, Terriek, Esq. 121, *Park-street, Grosvenor-square, W.*
- 1872 Hamilton, Walter, Esq. 48, *Sydney-street, Brompton, S.W.*
- 1846 Hamilton, Rear-Admiral W. A. Baillie. *Macartney-house, Blackheath, S.E.*
- 1871 Hanbury, P. Capel, Esq. 60, *Lombard-street, E.C.*

List of Fellows of the

Year of Election.

- 1853 *Hand, Admiral George S., C.B. U. S. Club, S.W.; and H.M.S. 'Victory.'
- 1860 *Handley, Benjamin, Esq. 1 *Lima, Peru*; and 74, *Market-place, Sheffield.*
- 1866 Hanham, Commr. T. B., R.N. *Manson-house, near Blandford, Dorset.*
- 1861 *Hankey, Blake Alexander, Esq.
- 1870 *Hankey, Rodolph Alexander, Esq. 54, *Belgrave-road, S.W.*
- 1857 Hankey, Thomson, Esq. 45, *Portland-place, W.*
- 1837 1030 *Hammer, Lord, F.R.S. 59, *Eaton-place, S.W.*; and *Hammer-hall and Bettisfield-park, Flintshire.*
- 1859 *Hansard, Henry, Esq. 13, *Great Queen-street, W.C.*
- 1870 Harbord, John B., Esq., M.A., Chaplain R.N. 69, *Victoria-park-road, E.*
- 1840 *Harcourt, Egerton V., Esq. *Whitwell-hall, York.*
- 1864 *Hardie, Gavin, Esq. 113, *Piccadilly, W.*
- 1864 Harding, Major Charles, F.R.S.L., F.S.S., F.A.S.L. *Grafton Club, 10, Grafton-street, Piccadilly, W.*
- 1864 Harling, J. J., Esq. 1, *Barnbury-park, Islington, N.*
- 1864 Hardinge, Capt. E., R.N. 32, *Hyde-park-square, W.*
- 1881 Hardinge, Henry, Esq., M.D. 18, *Grafton-street, Bond-street, W.*
- 1871 *Hargrave, Joseph, Esq. *Fort Garry, Winnipeg, Manitoba, Canada. Care of the Hudson Bay Company, 1, Lime-street, E.C.*
- 1868 1040 Harper, J. A. W., Esq. 23, *Grosvenor-road, Pimlico, S.W.*; and *Lloyd's, E.C.*
- 1875 Harper, W. H., Esq. *New Shoreham, near Brighton.*
- 1853 Harris, Admiral the Hon. Sir E. A. J., K.C.D. *H.B.M.'s Envoy Extraordinary and Minister Plenipotentiary, The Hague, Holland. Messrs. Woodhead.*
- 1869 Harris, Capt. G. F., 20th Regt. *Care of Col. Harris, 28, Leinster-road, Dublin.*
- 1859 Harris, Capt. Henry, H.C.S. 35, *Gloucester-terrace, Hyde-park, W.*
- 1871 Harris, Edwd., Esq. *Rydal-villa, Longton-grove, Upper Sydenham.*
- 1869 Harris, John, Esq. 31, *Belsize-park, Hampstead, N.W.*
- 1865 Harris, John M., Esq. *Felbana, Anerley-road, S.*
- 1863 Harrison, Charles, Esq. 3, *Great Tower-street, E.C.*
- 1870 Harrison, Charles, Esq. 10, *Lancaster-gate, W.*
- 1863 1050 *Harrison, William, Esq., F.S.A., F.G.S., &c. *Conservative Club, S.W.*; *Royal Thames Yacht Club, 7, Albemarle-street, W.*; and *Samlesbury-hall, near Preston, Lancashire.*
- 1838 Harrowby, Dudley, Earl of, F.R.S. *Sandon-house, Lichfield; and Norton, Gloucestershire.*
- 1872 Harston, Edward F. B., Esq. 14, *Mecklenburgh-square, W.C.*
- 1872 Hart, Frederick Ralph, Esq., Membre de la Société de Géographie de Paris, &c. *Trinidad, British West Indies.*
- 1863 *Hart, J. L., Esq. 20, *Pembroke-square, W.*
- 1854 *Hartland, F. Dixon, Esq., F.S.A., &c. 14, *Chesham-place, S.W.*; and *the Oaklands, near Cheltenham.*
- 1863 Harvey, Charles, Esq. *Rathgar-cottage, Streatham, S.*
- 1865 Harvey, C. H., Esq., M.D. 18, *Coleville-square, W.*

Year of
Election.

- 1867 Harvey, James, Esq. (Solicitor). *East-street, Invercargill, Southland, New Zealand. Care of the Bank of Otago, Old Broad-street, E.C.*
- 1864 Harvey, John, Esq. *Ickwell Bury, Biggleswade.*
- 1864 1060 Harvey, John, Esq. 7, *Mincing-lane, E.C.*
- 1869 Harvey, John, Esq., LL.D. *Château Deslyons, Boulogne-sur-Mer.*
- 1866 Harvey, Richard M., Esq. 13, *Devonshire-street, Portland-place, W.*
- 1864 Harvey, W. D., Esq. *Hollrooke-house, Richmond.*
- 1871 Harvie, Edgar Christmas, Esq. *City of London Club, Old Broad-street.*
- 1873 Hawker, Geo. Esq. 9A, *Porchester-terrace, W.*
- 1858 Hawker, Edward J., Esq. 37, *Cadogan-place, S.W.*
- 1834 Hawkins, Francis Bisset, Esq., M.D., F.R.S. 146, *Upper Harley-street, W.; and Leveil-lodge, Dorchester.*
- 1840 *Hawkins, John, Esq.
- 1858 *Hawkins, Colonel J. Summerfield, R.E. *The Castle, Dublin.*
- 1873 1070 Hawkins, Rev. W. Rentinck L., F.R.S. 33, *Bryanston-square, W.*
- 1861 Hawksley, Thomas, Esq., C.E. 14, *Phillimore-gardens, Kensington, S.W.*
- 1871 Hay, Andrew, Esq. *Oriental Club, Hanover-square, S.W.; and Bombay.*
- 1852 *Hay, Rear-Admiral Sir J. C. Dalrymple, Bart., M.P., F.R.S. 108, *St. George's-square, S.W.; U. S. Club, S.W.; Dunragit, Glenluce; and Harrow-on-the-Hill, N.W.*
- 1863 *Hay, Rear-Admiral Lord John, M.P., C.B. 15, *Cromwell-road, South Kensington, W.*
- 1865 Hay, Lord William. *D.S., Albany, W.*
- 1872 Hay, Jno. Ogilvy, Esq. (Hon. Magist. and J. P. Brit. Burmah). *Rangoon; and care of Messrs. Hay, Ingram and Co, 79, Great Tower-street, E.C.*
- 1872 Haydon, G. H., Esq. *Bethlehem Hospital, S.E.*
- 1870 Haynes, Stanley L., Esq., M.D. *Malvern-link, Worcestershire.*
- 1868 Haysman, David, Esq. *Portway-house, Weston, Bath.*
- 1862 1080 Head, Alfred, Esq. 13, *Craven-hill-gardens, Bayswater, W.*
- 1871 Head, Henry, Esq. *Stoke Newington, N.*
- 1871 Head, Geo. T., Esq. *East Cliff House Grammar-school, Margate.*
- 1863 Headlam, Right Hon. Thomas E., M.P. 27, *Ashley-place, Victoria-street, S.W.*
- 1856 Heath, J. Benj., Esq., F.R.S., F.S.A. 31, *Old Jewry, E.C.*
- 1863 Heathfield, W. E., Esq. *Arthur's Club, S.W.*
- 1861 Hector, Alexander, Esq.
- 1861 Hector, James, Esq., F.R.S., M.D. *Care of E. Stanford, Esq.*
- 1871 Heinemann, N., Esq., PH.D. 21, *York-place, Portman-square, W.*
- 1872 *Helme, Richard, Esq. *Walthamstow, Essex.*
- 1862 1090 Hemans, Geo. Willoughby, Esq., C.E. *Westminster-chambers, Victoria-street, S.W.*
- 1870 Henderson, David Mitchell, Esq. 1, *Carden-place, Aberdeen; and Old Calabar, W. Africa.*
- 1871 *Henderson, G., Esq., M.D., F.R.S. *Care of Messrs. King and Co., Pall-mall, W.*
- 1853 Henderson, John, Esq. 2, *Arlington-street, Piccadilly, W.*

Year of
Election.

- 1860 Henderson, Patrick, Esq. *Care of George Reid, Esq., 21, Abchurch-lane, E.C.*
- 1852 Henderson, William, Esq. *5, Stanhope-street, Hyde-park-gardens, W.*
- 1844 *Henenage, Edward, Esq. *Stag's-end, Hemel Hempstead.*
- 1861 Henn, Rev. J., B.A., Head Master of the Manchester Commercial Schools. *Old Trafford, Manchester.*
- 1860 Hennessy, J. B. N., Esq. *1st Asst. Trig. Survey of India, Dehra in the Doon, N.W. Provinces, India. Care of Messrs. H. S. King and Co.*
- 1838 *Henry, Wm. Chas., Esq., M.D., F.R.S. *Hassfield, near Ledbury, Herefordshire.*
- 1861 1100 Henty, Douglas, Esq. *Chichester.*
- 1870 Hepworth, Campbell, Esq. *2, St. James's-square, Cheltenham.*
- 1872 Herbert, Charles E., Esq. *Oriental Club, W.*
- 1857 Henl, Captain D. J. *2, Norway-house, Limehouse, E.*
- 1858 Hertlet, Edward, Esq. *Librarian, Foreign-office, S.W.; and Belle-rue-house, Richmond, S.W.*
- 1871 Hertlet, Geo. Thos., Esq. *Lord Chamberlain's-office, St. James's-palace, S.W.*
- 1861 Heugh, John, Esq. *Timbridge-wells.*
- 1840 *Heywood, James, Esq., F.R.S. *Athenaeum Club, S.W.; and 26, Kensington-palace-gardens, W.*
- 1869 Heywood, Samuel, Esq. *171, Stanhope-street, Hampstead-road, N.W.*
- 1899 Heyworth, Capt. Lawrence, 4th Royal Lancashire. *Junior United Service Club, S.W.*
- 1867 1110 Higgins, Edmund Thomas, Esq., M.R.C.A. *122, King Henry's-road, Haverstock-hill, N.*
- 1863 Hiley, Rev. W., M.A. *3, Cambridge-gardens, Richmond-hill, S.W.*
- 1850 Hill, Arthur Bowdler, Esq. *South-road, Clapham-park, Surrey, S.*
- 1873 Hill, Henry, Esq. *122, Leadenhall-street, E.C.*
- 1854 Hill, Lieut.-Colonel Stephen J., C.B., Governor of Antigua. *Army and Navy Club, S.W. Care of Capt. E. Barnett, R.N., 14, Woburn-square, W.*
- 1872 Hill, Samuel, Esq., M.D. *22, Mecklenburgh-square, W.C.*
- 1861 Hilliard, Lieut.-Colonel George Towers, Madras Staff Corps. *18, Sandringham-gardens, Ealing, W.*
- 1859 Hinchliff, T. Woolbine, Esq., Barrister-at-law. *64, Lincoln's-inn-fields, W.C.*
- 1862 *Hinde, Samuel Henry, Esq. *Windham Club, S.W.*
- 1846 *Hindmarsh, Frederick, Esq. *4, New-inn, Strand, W.C.*
- 1870 1120 Hitchins, Capt. T. M., R.A.
- 1872 *Hoare, Henry, Esq. (Banker). *Hoare's Bank, Fleet-street; and St. James's-square, S.W.*
- 1868 Hoare, Samuel, Esq., M.A. *1, Upper Hyde-park-street, W.*
- 1835 Hobbs, Wm. Geo. Ed., Esq. *Beulah-cottage, London-road, Enfield, N.*
- 1868 Hobson, Stephen James, Esq. *32, Nicholas-lane, Lombard-street; and 10, Regent's-park-road, N.W.*
- 1872 Hockin, Charles, Esq., M.A. *8, Avenue-road, St. John's-wood, N.W.*
- 1869 Hodges, Henry, Esq. *Brondesbury-lodge Collegiate-school, Kilburn.*
- 1856 *Hodgson, Arthur, Esq. *Clifton House, near Stratford-on-Avon.*

Year of
Election.

- 1871 *Hodgson, Henry Tylston, Esq. *Harpenden, St. Albans.*
- 1861 *Hodgson, James Stewart, Esq. 8, *Bishopsgate-street, E.C.*
- 1857 1130 Hodgson, Kirkman Daniel, Esq. 6, *Bishopsgate-street, E.C.*
- 1869 *Hodgson, William H., Esq. *Treasury-chambers; and 1, Whitehall-gardens, S.W.*
- 1856 Hogg, James, Esq. 14, *Windsor-road, Denmark-hill, S.E.*
- 1848 Holdich, Lieut. Thos. Hungerford, R.E.
- 1839 *Holford, Robert S., Esq. *Dorchester-house, Park-lane, W.*
- 1867 Holland, Rev. Fred. Whitmore. *Excham, Worcester.*
- 1830 Holland, Sir Henry, Bart., M.D., F.R.S. 25, *Lower Brook-street, W.*
- 1861 Holland, Colonel James. *Southside, The Park, Upper Norwood, S.E.*
- 1863 Holland, Loton, Esq. *The Gables, Osborne-road, Windsor.*
- 1862 Holland, Robert, Esq. *Stammore-hall, Great Stammore, Middlesex.*
- 1871 1140 Hollingworth, Hy. Geo., Esq. *Kim King, China; and Chestnut-grove, Wutertree, Liverpool.*
- 1861 Holme, J. Wilson, Esq., M.A. *Downswood, Beckenham, Kent, S.E.*
- 1935 *Holmes, James, Esq. 21, *Holland-villas-road, Kensington, W.*
- 1839 *Holroyd, Arthur Todd, Esq., M.D., F.R.S. *Master's-office, Sydney, New South Wales. Care of Edjar Howell, Esq., 3, St. Paul's-churchyard, E.C.*
- 1857 Holroyd, Henry, Esq., Barrister-at-Law. 2, *Elm-court, Temple, E.C.*
- 1867 *Holstein, The Marquez de Souza. *Lisbon. Care of Messrs. Kraentler and Miville, 12, Angel-court, E.C.*
- 1869 Holt, George, Esq. *Union-street, Willenhall.*
- 1871 Holt, Henry T. W., Esq. 6, *King's-road, Clapham-park; King and Co., Cornhill.*
- 1872 Holt, Lieut. Sydney A., R.N. *H.M.S. 'Favorite,' Queensferry, N.B. Care of Messrs. Hildreth and Ommannay, 41, Norfolk-street, Strand, W.C.*
- 1864 Holt, Vesey, Esq. 17, *Whitehall-place, S.W.*
- 1873 1150 Home, Capt. Robert, R.E. 25, *Kilbrook-road, Mickleth, S.E.*
- 1857 Homfray, William Henry, Esq. 6, *Storey's-gate, S.W.*
- 1864 *Hood, Sir Alex. Acland, Bart. *St. Andrie's-park, Bridgewater, Somerset.*
- 1862 Hood, Henry Schuback, Esq. *War-office, S.W.; and 10, Kensington-park-gardens, W.*
- 1866 *Hooker, Joseph, Esq., C.B., M.D., F.R.S., F.L.S., &c. *Director of the Royal Gardens, Kew.*
- 1868 Hooper, Alf., Esq. *City of London Club, Old Broad-street, E.C.*
- 1870 Hooper, George Norgate, Esq. 139, *King Henry's-road, Adelaide-road, N.W.*
- 1870 Hooper, Rev. Robert Poole. 29, *Cambridge-street, Brighton.*
- 1861 Hopcraft, George, Esq. 3, *Billiter-square, E.C.*
- 1846 *Hope, Alex. James Beresford, Esq., M.P. *Arklow-house, Connaught-place, Hyde-park, W.; and Badgebury-park, Hurst-green, Kent.*
- 1862 1160 Hope, Capt. C. Wobley, R.N. *H.M.S. 'Brist,' Australia; Messrs. Hallett & Co.*
- 1869 Hopkins, Capt. David, M.A.I. *New Calabar, near Bonny, W. Africa. Care of Company of African Merchants, 6, Water-street, Liverpool.*

Year of
Fellowship

- 1870 •Hopkins, Edward M., Esq. 66, *Great Cumberland-place, Hyde-park, W.*
- 1871 Hornby, Rev. James John, D.D. *Head Master of Eton-college.*
- 1871 Horne, Francis, Esq. *Berrylands, Surbiton.*
- 1869 Horrex, Theophilus, Esq. 18, *Connaught-square, Hyde-park, W.*
- 1868 Horton, James Africanus B., Esq., M.D., &c. *Care of Messrs. McGregor and Co., 25, Charles-street, S.W.*
- 1870 Hosenson, Captain John C., R.N. *United Service Club, S.W.*
- 1861 Hoskins, Capt. A. H., R.N. *Army and Navy Club, S.W. Care of Messrs. Woodhead.*
- 1853 Houghton, Lord, D.C.L., F.R.S. *Travellers' Club, S.W.; The Hall, Bawtry; and Fryaton-hall, Ferrybridge, Yorkshire.*
- 1858 1170Hoswell, William Hilton, Esq. *Goulburn, New South Wales. Care of Mr. W. Chamberlin, 74, Fleet-street, E.C.*
- 1869 Howard, John, Esq., C.E. *Ermouth, Devon.*
- 1853 Howard, Sir Ralph, Bart. 17, *Belgrave-st., S.W.; and Bushy-park, Wicklow.*
- 1857 Howard, Samuel Lloyd, Esq. *Goldings, Loughton, Essex.*
- 1864 Howell, W. G., Esq.
- 1842 •Hubbard, J. Gellibrand, Esq. 24, *Prince's-gate, Hyde-park, W.*
- 1867 •Hubbard, William Egerton, Esq. 63, *Eaton-square, S.W.*
- 1867 •Hubbard, William Egerton, Esq., jun. 63, *Eaton-square, S.W.*
- 1871 •Hudleston, Wilfred, Esq. 23, *Cheyne-walk, S.W.*
- 1872 Hudson, Jas., Esq. 5, *Crosby-square, E.C.; and Thatched House Club, St. James's, S.W.*
- 1870 1180Hudson, George B., Esq. *Frymore-hall, Hertford. New University Club, St. James's-street, S.W.*
- 1857 Hughes, Captain Sir Frederic. *Ely-house, Wexford.*
- 1838 Hughes, William, Esq. 8, *Deronshire-terrace, Kensington, W.*
- 1838 •Hume, Edmund Kent, Esq.
- 1860 •Hume, Hamilton, Esq. *Cooma Pass, New South Wales. Care of Rev. A. Hume, All Souls'-vicarage, Liverpool.*
- 1861 Hunt, George S. Lennox, Esq., H.B.M. Consul, *Rio de Janeiro.*
- 1868 Hunt, John Percival, Esq., M.D. 78, *Grosvenor-road, Highbury-nex-park, N.*
- 1865 Hunt, Captain Thomas, R.N.A.
- 1868 Hunter, Major Edward. *Junior United Service Club, S.W.*
- 1862 Hunter, Henry Lannoy, Esq. *Beech-hill, Reading.*
- 1871 1190Hutchins, F. Leigh, Esq. *Altham, Kent, S.E.*
- 1870 Hutchins, Edward, Esq. 10, *Portland-place, W.*
- 1871 •Hutchinson, Major Alexr. Hadden, R.A., F.O.S., *Garrison Instructor.*
- 1864 Hutchinson, Capt. R. R. *Junior St. James's Club, St. James's-street, S.W.*
- 1872 Hutchinson, Edward, Esq. 8, *Summer-place, South Kensington, W.*
- 1858 Hutchinson, Thomas J., Esq., F.R.S.L., F.E.S., F.A.S.L., H.B.M. Consul, *Callao, Peru.*
- 1870 •Hutton, Charles W. C., Esq. *Belsir, Dulwich, S.*
- 1860 •Hyde, Captain Samuel. 8, *Bulliter-square, E.C.*

Year of
Election.

- 1835 Illingworth, Rev. Edward A. *Care of F. Illingworth, Esq., Union Bank, Anyyll-place, W.*
- 1852 Illingworth, Richard Stonhewer, Esq. *9, Norfolk-crescent, Hyde-park, W.*
- 1850 1200*Imray, James Frederick, Esq. *89, Minories, E.; and Beckenham, Kent, S.E.*
- 1861 *Ingall, Samuel, Esq. *Forest-hill, Kent, S.E.*
- 1851 Inglefield, Admiral Edward A., C.B., F.R.S. *United Service Club, S.W.; and 10, Grove-end-road, St. John's-wood, N.W.*
- 1871 Inglis, Commander Charles D., R.N. *7, Albemarle-street, W.*
- 1846 Ingram, Hughes Francis, Esq. *University Club, S.W.*
- 1869 Inman, Robert Matthew, Esq., M.D. *Edinburgh-house, West-street, Brighton.*
- 1860 *Inskip, Staff Commander G. H., R.N. *H.M. Surveying Vessel 'Porcupine,' and 9, Torrington-villas, High-road, Lee, S.E.*
- 1852 *Inskip, Rev. Robert Mills, C.B. *37, Coburg-street, Plymouth.*
- 1840 *Irby, Frederick W., Esq. *Athenæum Club, S.W.*
- 1870 Irvine, James, Esq. *18, Devonshire-road, Chughton, Cheshire.*
- 1864 1210*Irving, John, Esq. *Care of Messrs. Edworth and Sons, 2, Gresham-place, Lombard-street, E.C.*
- 1861 Irwin, James V. H., Esq. *10, Nottingham-place, Euston-road, N.*
- 1871 Jackson, Henry, Esq., Lieut. late I.N. (Chief Surveyor of the Province of Wellington). *New Zealand.*
- 1871 Jackson, Richd. Belgrave, Esq. *16, Addison-terrace, Kensington, W.*
- 1866 Jackson, Robert Ward, Esq. *28, Inverness-road, Hyde-park, W.*
- 1873 Jackson, F. H. Ward, Esq. *9, Albion-street, Hyde-park, W.*
- 1871 Jackson, Thos. Hughes, Esq. *Manor-house, Birkenhead.*
- 1855 Jackson, William, Esq. *44, Portland-place, W.*
- 1871 Jackson, Wm. Chas., Esq. *Universities Club, 71, Jermyn-street, S.W.*
- 1862 Jacob, Thomas, jun., Esq. *23, Old Broad-street, Gresham-house, E.C.*
- 1870 1220James, William Morris, Esq. *8, Lyndhurst-road, Hampstead, N.W.*
- 1861 James, William Bosville, Esq. *13, Blomfield-road, Maids-hill, W.*
- 1868 Jamieson, Robert Alexander, Esq., M.A. *Shanghai. Care of J. P. Watson, Esq., St. Dunstan's-buildings, St. Dunstan's-hill, E.C.*
- 1868 Jamieson, Hugh, Esq. *Junior Carlton Club, S.W.*
- 1862 *Jaques, Leonard, Esq. *Wentbridge-house, Pontefract, Yorkshire.*
- 1863 *Jardine, Andrew, Esq. *Lanrick-castle, Stirling.*
- 1863 *Jardine, Robert, Esq., M.P. *Castlemilk, Lockerby, N.B.*
- 1871 Jarrad, Lieut. F. W., R.N. *H.M.S. 'Porcupine,' and Aron-house, Langley-Burrel, near Chippenham.*
- 1857 Jefferson, Richard, Esq. *A 4, The Albany, W.*
- 1872 Jeffreys, A. P., Esq. *Fernhill, Bournemouth; and 21, Sackville-street, W.*

Year of
Election.

- 1865 1230 Jeffreys, J. G., Esq., F.R.S. *Ware Priory, Herts.*
- 1860 *Jejeebhoy, Sir Jamsetjee, Bart. *Bombay.*
- 1854 Jellicoe, Charles, Esq. 12, *Cavendish-place, W.*
- 1854 Jenkins, Capt. Griffith, I.N., C.N. *East India Club, St. James's-square, S.W.; and Derwen, Welshpool, Montgomeryshire.*
- 1837 *Jenkins, R. Castle, Esq. *Beachley, near Cheltenham.*
- 1854 *Jennings, William, Esq., M.A. 13, *Victoria-street, Westminster, S.W. :*
- 1871 Jenoure, Alfred, Esq. *Kew, Surrey.*
- 1860 Jermyn, Rowland Formby, Esq. *War-office, S.W.*
- 1850 Jessopp, Rev. Augustus, M.A., Head Master, *King Edward VI. School, Norwich.*
- 1870 Jessop, Captain Thomas. 37, *Clarges-street, Piccadilly, W.*
- 1864 1240 *Jeula, Henry, Esq. *Lloyfs, E.C.*
- 1871 Johnson, George, Esq., M.D. 11, *Seville-row, W.*
- 1859 *Johnson, Henry, Esq. *Messrs. Johnson, 7, Bedford-row, Worthing, Sussex.*
- 1854 Johnson, John Hugh, Esq.
- 1870 Johnson, T. Scarboro, Esq. 42, *Gloucester-place, Hyde-park, W.*
- 1866 Johnson, W. H., Esq., Civil Assistant G. T. S. India. *Care of F. Drew, Esq., 24, Eastbourne-terrace, W.*
- 1858 *Johnston, Alexander Keith, Esq., jun. 74, *Strand, W.C.*
- 1856 Johnston, A. R., Esq., F.R.S. *Heatherley, Sandhurst, near Wokingham, Berks.*
- 1857 Johnston, J. Brookes, Esq. 29, *Lombard-street, E.C.*
- 1871 Johnston, T. B., Esq., F.R.S.E. 4, *St. Andrew-square, Edinburgh.*
- 1868 1250 Johnston, Thomas, Esq. 12, *Belvedere, Bath; and King Edward VI. Grammar-school, Bath.*
- 1866 Johnstone, Colonel H. C., C.B., F.R.A.S. *Murree, Punjab, India. Care of Messrs. H. S. King and Co., Cornhill, E.C.*
- 1867 *Johnstone, John, Esq. *Castellany-house, Mortlake, S.W.*
- 1872 Jolley, Wm. Rowe, Esq., M.A., Hon. Chaplain to the Queen, Rector of North *Repps, Norwich.*
- 1864 Jones, Captain Felix, late I.N. *Fernside, Church-road, Westow-hill, Upper Norwood, S.*
- 1868 Jones, Captain H. M., V.C.
- 1857 Jones, Lieut.-Col. Jenkin, Royal Engineers. 1, *Lennard-place, Circus-road, St. John's-wood, N.W.; and India.*
- 1862 Jones, John, Esq. 338, *Strand, W.C.*
- 1872 Jones, Staff-Commander Jno., R.N. 6, *Edwards-square, Kensington, W.*
- 1871 Jones, Robert, Esq. *The Manor House, St. John's-wood-park, N.W.*
- 1861 1250 Jones, Sir Willoughby, Bart. *Cranmer-hall, Fakenham, Norfolk.*
- 1867 *Jordan, Wm. Leighton, Esq. 1, *Pois-square, Notting-hill, W.*
- 1863 Joshua, Moss, Esq. *Melbourne.*
- 1868 Kantrow, Captain H. P. de, R.N. *United Service Club, S.W.*

Year of
Election.

- 1858 Kay, David, Esq. 19, *Upper Phillimore-place, Kensington, W.*
- 1865 Kaye, Sir John W., K.C.S.I., F.R.S. *India-office, S.W.*
- 1857 Keating, Hon. Sir Henry Singer, one of the Judges of the Court of Common Pleas.
11, *Prince's-gardens, S.W.*
- 1863 Keir, Simon, Esq. *Conservative Club, S.W.*
- 1845 *Kellett, Rear-Admiral Sir Henry, K.C.B. *Clonmel, Ireland.*
- 1860 *Kemball, Col. Sir Arnold Burrowes, K.C.B.I., C.B., Indian Army. *United Service Club, S.W.*
- 1871 1270 Kemp, Geo. L., Esq., Manager of the Standard Insurance Co. (of England) Calcutta. *Care of Messrs. A. W. Ray and Co., 10, Old Jewry Chambers, E.C.*
- 1863 Kempster, J., Esq. 1, *Portsmouth-place, Kennington-lane, Surrey, S.*
- 1861 Kennard, Adam Steinmetz, Esq. 7, *Fenchurch-street, E.C.*
- 1871 Kennedy, Henry Wyndham, Esq. 5, *Clarendon-place, Hyde-park-gardens, W.*
- 1854 Kennedy, Rev. John, M.A. 4, *Stepney-green, E.*
- 1871 Kennion, Rev. George Wyndham, B.A. *Doncaster.*
- 1871 Kenrick, George, Esq. 6, *Percy-villas, Camden-hill, Kensington, W.*
- 1872 Kerr, Alexander, Esq. (Banker), Wellington, New Zealand. *Care of A. Bennie, Esq., 71, Jermyn-street, E.C.; and Oriental Club, S.W.*
- 1863 Kerr, J. H., Esq., Staff-Commr. R.N. *Hydrographic-office, S.W.*
- 1862 Kershaw, Wm., Esq. 16, *St. Mary Axe, E.C.; and Suffolk-lodge, Brixton-road, S.*
- 1862 1280 Key, J. Binney, Esq. *Oriental Club, W.*
- 1857 Keysell, Francis P., Esq. *Grove-house, Cheshunt.*
- 1864 Kiddie, W. W., Esq. *Linton-villa, Clarendon-road, Southsea.*
- 1864 Kimber, Dr. E. *Murchison-house, Dulwich, S.E.*
- 1846 King, Lieut.-Colonel Edward R., 36th Regt. *Junior United Service Club, S.W.*
- 1870 King, Henry S., Esq. J.P. 65, *Cornhill, E.C.; 45, Pall-mall, S.W.; Manor-house, Chigwell, Essex; and Junior Carlton Club, S.W.*
- 1866 King, John, Esq. *Compton-field-place, Guildford, Surrey.*
- 1872 King, James, Esq. 29, *Claremont-terrace, Glasgow.*
- 1861 King, Lieut.-Col. W. Rice, Unatt., F.R.S. Scot. *Tertonie, Kinellar, Aberdeenshire; and Army and Navy Club, S.W.*
- 1857 *Kinnaird, Hon. Arthur F., M.P. 2, *Pall-mall-east, S.W.*
- 1867 1290 Kinnaird, George William Fox, Lord, K.O. *Rossie-priory, Inchture, N.B.; and 33, Grosvenor-street, W.*
- 1858 Kirk, John, Esq., M.D. *Care of J. F. Rogers, Esq., 25, South-castle-street, Edinburgh.*
- 1863 Kirke, John, Esq., Barrister. *C. Thorold, Esq., Welham, Retford, Notts.*
- 1870 Kirkland, Major-Gen. John A. Vesey. 17, *Whitehall-place, S.W.*
- 1868 Kisch, Daniel Montagu, Esq. 47, *Gloucester-square, Hyde-park, W.*
- 1866 *Kitson, James, jun., Esq. *Hanover-square, Leeds.*
- 1868 Kitto, Richard L. Middleton, Esq. *Church-hill-villa, Fryerstown, Victoria, Australia.*

Year of
Election.

- 1833 *Kjaer, Thomas Andreas, Esq. *Gathernegården No. 26, Copenhagen.*
- 1867 Knight, Andrew Halley, Esq. *Care of R. Philpott, Esq., 3, Abchurch-lane, E.C.*
- 1862 Knollys, General Sir William T., K.C.B., Vice-President Council of Military Education. *Eaton-square, S.W.*
- 1871 1300 Knollys, Major W. W. (93rd Highlanders). *Guards' Club, S.W.*
- 1867 Knox, Alex. A., Esq. 91, *Victoria-street, Westminster, S.W.*
- 1861 Knox, Thomas G., Esq. *India. Care of Messrs. H. S. King and Co., 45, Pall-mall, S.W.*
- 1866 Kopsch, Henry, Esq. *Custom-house, Shanghai. Care of H. C. Batchelor, Esq., 155, Cannon-street, E.C.*
- 1861 Kyd, Hayes, Esq., M.R.C.S. *Wadebridge, Cornwall.*
- 1859 Labrow, Lieut.-Colonel Valentine H., F.S.A., F.O.S. *Mitre-court-chambers, Temple, E.C.; and Club-chambers, S.W.*
- 1870 Lackersteen, Mark H., Esq., M.D., &c. 29, *Queen Anne-st., Cavendish-sq., W.*
- 1849 *Laffan, Colonel Robert Michael, R.E. *Army and Navy Club, S.W.; and Otham-lodge, Kent.*
- 1870 Laing, Arthur, Esq. 18, *Kensington-gardens-square, Hyde-park, W.*
- 1869 Lamb, Hon. Edward William. *Brisbane, Queensland, Australia.*
- 1859 1310 Lamb, Lieut. Henry, L.N. *H.M. India Store Department, Belvedere-road, Lambeth, S.*
- 1863 *Lambert, Alan, Esq. *Heath-lodge, Putney-heath, S.W.*
- 1864 Lambert, Charles, Esq. 2, *Queen-street-place, Upper Thames-street, E.C.*
- 1867 Lambert, Wm. Blake, Esq., C.E. 3, *Morden-road, Blackheath, S.E.*
- 1861 Lamont, James, Esq. *Gartmore-house, Stirling.*
- 1870 Lamplough, Charles Edward, Esq. *City of London Club, E.C.*
- 1866 Lampray, John, Esq. 16, *Camden-square, N.W.*
- 1867 Lamprey, Jones, Esq., M.D., Surgeon-Major 67th Regiment.
- 1864 Lampson, Sir C. M., Bart. 80, *Eaton-square, S.W.*
- 1838 *Lance, John Henry, Esq., F.L.S. *The Holmwood, Dorking.*
- 1861 1320 *Lang, Andrew, Esq. *Dunmore, Hunter-river, New South Wales; and Dunmore, Teignmouth, Devon.*
- 1859 *Lange, Sir Daniel A. 21, *Regent-street, W.*
- 1863 Langley, Edward, Esq. *Well-hall, Eltham, Kent.*
- 1856 *Langler, John R., Esq., B.A. *Wesleyan Training College, Westminster; and Gothic-villas, 2, Bridge-road-west, Battersea, S.W.*
- 1871 Langworthy, Edward, Esq. *Gap-house, Holyport, Maidenhead.*
- 1870 Lanyon, Charles, Esq. 3, *Paper-buildings, Temple, E.C.*
- 1833 *Larcom, Major-General Sir Thomas Aiskew, Bart., R.E., K.C.B., F.R.S. *Heath-field, Farcham, Hants.*
- 1872 Larcom, Lieut. T. H. *Care of Messrs. Stillwell, 22, Arundel-street, W.C.*
- 1861 Lardner, Colonel John. *United Service Club, S.W.*

Year of
Election.

- 1873 Large, Robert Emmott, Esq. *Vernon-lodge, Teddington; and 13, South-square, Lincoln's-inn, W.C.*
- 1859 1330 Larnach, Donald, Esq. *21, Kensington-palace-gardens, W.*
- 1870 Lassetter, Frederic, Esq. *Sydney, New South Wales; and 3, Belsize-park, N.W.*
- 1854 Latrobe, Ch. J., Esq. *Clapham-house, Lewes, Sussex.*
- 1870 Laughton, Lieut.-Col. George Arnold (Bombay Staff Corps). *Superintendent Bombay Survey, Bombay.*
- 1869 Laughton, J. K., Esq. *Royal Naval College, Greenwich.*
- 1873 Law, Geo., Esq. *1, Raymond-buildings, Gray's-inn, W.C.*
- 1873 Law, Jas., Esq. *22, Gower-street, W.*
- 1846 *Law, Hon. H. Spencer, M.A. *40, Eaton-place, S.W.*
- 1870 Lawrence, Alexander, Esq. *Clyde-house, Thurloe-road, Hampstead; and Windsor-chambers, Great St. Helen's, E.C.*
- 1870 *Lawrence, Philip Henry, Esq. *12, Whitehall-place, S.W.*
- 1870 1340 Lawrence, Lord, G.C.B., G.C.S.I. *26, Queen's-gate, W.*
- 1869 Lawrie, James, Esq. *63, Old Broad-street, E.C.*
- 1867 Lawson, William, Esq. *21, Walkham-green, Fulham, S.W.*
- 1862 *Lay, Horatio N., Esq.
- 1857 Layard, Right Hon. Austen H., D.C.L. *130, Piccadilly, W.*
- 1866 *Layard, Captain Brownlow Villiers (3rd W. India Regt.). *Junior United Service Club; and 38, Upper Mount-street, Dublin.*
- 1863 *Leaf, Charles J., Esq. *Old-change, E.C.; and The Rylands, Norwood, S.*
- 1869 *Leaf, F. H., Esq. *Burlington-lodge, Streatham-common, S.W.*
- 1866 Lebour, G. A., Esq. *28, Jermyn-street, S.W.*
- 1853 *Le Breton, Francis, Esq. *21, Sussex-place, Regent's-park, N.W.*
- 1861 1350 Leckie, Patrick C., Esq. *7, Palace-road, Roupell-park, Streatham, S.*
- 1870 Lecky, Squire Thornton Stratford, Esq., Lt. Royal Naval Reserve. *47, Aubrey-street, Everton, Liverpool.*
- 1868 Lee, John, Esq. *Grosvenor Cottage, Loughborough-road, S.W.*
- 1869 *Lees, Lieutenant-Colonel Nassau, D.C.L. *Athenæum Club, S.W.*
- 1865 Le Feuvre, W. H., Esq., C.E. *68, Bedford-gardens, Kensington, W.*
- 1833 *Lefevre, Sir John George Shaw, M.A., D.C.L., F.R.S., Vice-Chancellor of the University of London. *18, Spring-gardens, S.W.*
- 1853 Lefroy, General John Henry, R.A., F.R.S. *Athenæum Club, S.W.*
- 1862 Leggatt, Clement Davidson, Esq. *43, Inverness-terrace, W.*
- 1861 Legh, Wm. John, Esq. *38, Belgrave-square, S.W.; and Lyme-park, Cheshire.*
- 1861 *Lehmann, Frederick, Esq. *15, Berkeley-square, W.*
- 1845 1360 Leigh, John Studdy, Esq., F.O.S. *6, Talbot-road, Westbourne-park, W.*
- 1869 Leigh, Roger, Esq. *Barham-court; and Hindley-hall, Hindley.*
- 1863 Le Mesurier, Henry P., Esq., C.E. *21, Stanley-crescent, Kensington-park, W.*
- 1856 Leslie, The Hon. G. W. *4, Harley-street, W.*

Year of
Election.

- 1857 L'Estrange, Carleton, Esq. *Carlton Club, S.W.*
- 1840 *Letts, Thomas, Esq. *South-view-house, Blackgang, Isle of Wight.*
- 1857 Leverton, George B. C., Esq. 73, *Gloucester-terrace, Hyde-park, W.*
- 1871 Levert, Arthur Lionel, Esq. *Naval and Military Club, Piccadilly, W.*
- 1869 Leveson, Edward J., Esq. *Cluny, Crescent-wood-road, Sydenham-hill, S.E.*
- 1866 Leringe-Swift, Richard, Esq.
- 1859 1370 Levinsohn, Louis, Esq. *Vernon-house, Clarendon-gardens, Maiden-hill, W.*
- 1855 Levy, William Hanks, Esq. *Institution of the Association for Promoting the Welfare of the Blind, 210, Oxford-street, W.*
- 1869 *Lewin, Capt. Thomas (Beng. Staff Corps).! *East India United Service Club, S.W.*
- 1873 *Lewin, Frederick Dealtry, Esq. 12, *Blessington-road, Lee, S.E.*
- 1872 Lewis, Jos., Esq., R.A. *Castle Carrow, Currick-on-Shannon.*
- 1852 Leycester, Captain Edmund M., R.N. 17, *Eastbourne-terrace, Paddington, W.*
- 1861 Leyland, Luke Swallow, Esq. *The Leylands, Hatfield, Doncaster.*
- 1859 Lichfield, Thomas George, Earl of. *Shugborough, Staffordshire.*
- 1872 Liebenrood, Captain J., R.N. *Belmont-lodge, Lee, Kent; and 35, Moray-place, Edinburgh.*
- 1869 Ligar, C. W., Esq., Surveyor-General of Victoria. 4, *Royal Exchange-avenue, E.C.; and Melbourne, Australia.*
- 1870 1380 Light, Rev. John. 13, *Notting-hill-terrace, W.*
- 1856 Lilford, Thomas Lyttleton Powys, Lord. 10, *Grosvenor-place, W.*
- 1860 Lindsay, H. Hamilton, Esq.
- 1857 Lindsay, Major-General the Hon. J., Grenadier Guards, M.P. 20, *Portman-sq., W.*
- 1870 Lindsay, James, Lord. 47, *Brook-street, Grosvenor-square, W.*
- 1867 *Lindsay, Colonel Robert J. L., M.P., V.C. *Lockinge-house, Wantage, Berks; and 2, Carlton-gardens, S.W.*
- 1855 *Lindsay, William S., Esq. *Manor-house, Shepperton, Middlesex.*
- 1869 Lindsey, Mark John, Esq. 32, *Lady-ute-hill, E.C.; and Burnt-nah-lane, Lee, Kent.*
- 1866 Linton, Robert P., Esq., F.R.C.S., M.R.I. 14, *St. James's-square, S.W.*
- 1866 Little, Archibald J., Esq. 71, *Brook-street, Grosvenor-square, W.*
- 1871 1390 Little, Simon, Esq. *Culantra-house, Wexford, Ireland.*
- 1870 Littleton, The Hon. Henry S. *Tekdesley, Penkridge, Staffordshire.*
- 1869 Livingstone, Charles, Esq.
- 1857 *Lloyd, George A., Esq. *George-yard, Lombard-street, E.C.*
- 1873 Lloyd, Percival, Esq. *The Limes, Crouch-hill, Hornsey.*
- 1863 Lloyd, Sir Thomas Davis, Bart. *United University Club, S.W.; and Bronwydd, Carmarthen.*
- 1864 *Lloyd, W., Esq. *Myood House, Wednesbury, Staffordshire.*
- 1867 Lloyd, Rev. William V., M.A. 16, *Lancaster-gate, W.*
- 1861 Lloellyn, Capt. Richard. 20, *Montagu-square, W.*
- 1869 Lloellyn, Major William R., R.A. *Army and Navy Club, S.W.*
- 1868 1400 Lobley, James Logan, Esq., F.G.S. 59, *Clarendon-road, W.*
- 1872 Lobo, Manoel da Gama, Esq., M.D. *Rio de Janeiro.*
- 1863 Loch, George, Esq.

Year of
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- 1859 Loch, Henry Brougham, Esq. *Government-house, Isle of Man.*
- 1861 Loch, John Charles, Esq. *Hong-Kong.*
- 1857 Loch, William Adam, Esq. 8, *Great George-street, Westminster, S.W.*
- 1864 Locke, John, Esq. 83, *Addison-road, Kensington, W.*
- 1858 Lockhart, William, Esq., F.R.C.S. *Park-villas, Grunville-park, Blackheath, S.E.; and China.*
- 1868 Lockhart, Captain Wm. Stephen Alexander.
- 1860 Lockwood, James Alfred. *United Arts Club, Hanover-square, W.*
- 1872 1410 Logan, Sir T. Galbraith, K.C.B., M.D. 40, *Hyde-park-square, W.*
- 1856 * Logan, Sir William Edmond, F.R.S. *Montreal, Canada*
- 1868 Lomonossoff, M. Alexis de. *Irkoutsk, East Siberia.*
- 1860 Londesborough, Wm. Henry Forester, Lord. 38, *Berkeley-square, W.*
- 1830 * Long, George, Esq., M.A. 2, *Rhine-villas, Portfield, Chichester.*
- 1857 * Long, W. Beeton, Esq.
- 1872 Longlen, J. R., Esq. (late Governor of Trinidad). 75, *Gloucester-place, Port-mann-square, W.*
- 1858 Longlen, Merrell D., Esq. 4, *Ennismore-place, Hyde-park, S.W.*
- 1865 * Longley, Major George, R.E. 60, *Prince's-gate, W.*
- 1847 Longman, Thos., Esq. *Paternoster-row, E.C.*
- 1858 1420 Longman, William, Esq. 36, *Hyde-park-square, W.*
- 1870 * Longstaff, Capt. Llewellyn Wood. *Ganstead-hall, Hull.*
- 1861 Lonsdale, Arthur Pemberton, Esq.
- 1860 Looker, William Robert, Esq. *Melbourne, Australia. Care of Mr. Ashurst, 16, Bishopsgate-street-within, E.C.*
- 1864 Lothian, William Schomberg, Marquis of. 15, *Bruton-street, W.*
- 1873 Lovett, Capt. Beresford, R.E., *East India United Service Club, 14, St. James's-square, S.W.*
- 1856 Lovett, Phillips Cosby, Esq. *Liscombe-ho., Liscombe, Leighton Buzzard, Bucks.*
- 1867 Low, Alex. F., Esq. 84, *Westbourne-terrace, W.*
- 1863 Low, S. P., Esq. 55, *Parliament-street, S.W.*
- 1858 Lowden, Rev. George Rouse. *St. Leonard-villa, Hanwell, Middlesex.*
- 1859 1430 Lowe, Captain W. Drury. *Myria, Bettws-y-Coed, Llanrwst, North Wales.*
- 1863 Lowndes, E. C., Esq. 84, *Eaton-place, S.W.*
- 1830 Lowry, Joseph Wilson, Esq. 39, *Robert-street, Hampstead-road, N.W.*
- 1860 Loyd, Colonel W. K. *Union Club, S.W.*
- 1870 Luard, Captain Charles Edward, R.E. *South Camp, Aldershot.*
- 1866 Luard, Wm. Charles, Esq. *Llandaff-house, Cardiff; and Athenæum Club, S.W.*
- 1871 * Lubbock, Sir John, Bart, M.P., F.R.S., &c. *High-elms, Beckenham, Kent.*
- 1871 Ludlow, Edgar John David, Esq. *Care of Geo. Perry, Esq., 67, Charleswood-street, St. George's-road, S.W.*
- 1872 * Lumsden, Colonel P. S., C.S.I., Quartermaster-General, Bengal Army. *Care of General H. Lumsden.*
- 1860 Lush, Sir Robert, Q.C. *Balmoral-house, Avenue-road, Regent's-park, N.W.*

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- 1870 1440 Lyall, George, Esq. 73, *Eaton-place, S.W.*; and *Hedley, near Epsom.*
- 1866 Lydall, J. H., Esq. 12, *Southampton-buildings, Chancery-lane, W.C.*
- 1869 Lye, John Gaunt, Esq. 18, *Prince of Wales-terrace, Kensington, W.*
- 1830 *Lyell, Sir Charles, Bart., M.A., LL.D., F.R.S. 73, *Harley-st., Cavendish-sq., W.*
- 1861 *Lynch, Thomas Kerr, Esq. 31, *Cleveland-square, Hyde-park, W.*
- 1858 Lyne, Francis, Esq. 12, *Blomfield-terrace, Harrow-road, W.*
- 1871 Lyveden, Robert Vernon, Lord, G.C.B. 20, *Savile-row, W.*
- 1863 Macbraire, James, Esq. *Broadmeadows, Berwick-on-Tweed.*
- 1862 Macdonald, Chessborough C., Esq. 32, *Delzize-park, Humpstead, N.W.*
- 1871 Macdonald, William, Esq. *Yokohama, Japan.*
- 1843 1450 Macdonnell, Sir Richard Graves, K.C.M.G., C.B. 58, *Curzon-street, Mayfair, W.*
- 1865 Macfarlan, John G., Esq. *The Tower, Richmond-bridge.*
- 1868 Macgregor, Lieut.-Col. C. M. *Bengal. Care of Messrs. H. S. King and Co., 65, Cornhill, E.C.*
- 1855 Macgregor, Duncan, Esq. *Athenæum Club, S.W.*
- 1872 *Macgregor, John, Esq., M.A. *Athenæum Club, S.W.*
- 1861 Mackintosh, Alexander Brodie, Esq. *Oriental Club, W.*; and *Dunoon, Scotland.*
- 1845 *Macintyre, Patrick, Esq., F.S.A., Off. Assoc. Inst. Act. 1, *Maiden-tale, W.*
- 1868 Mackay, Dr. A. E., R.N. *Admiralty, Somerset-house, W.C.*
- 1859 Mackay, Rev. Alexander, LL.D. 1, *Hatton-place, Grange, Edinburgh.*
- 1870 Mackay, Nevile F., Esq. 2, *Elm-court, Temple, E.C.*
- 1859 1460 *Mackean, Thos. W. L., Esq. *Bank of British Columbia, 5, East India-avenue, E.C.*
- 1873 Mackelvie, Jas. Tannock, Esq. *Care of Messrs. Sinclair, Hamilton, and Co., 17, St. Leonard's-place, E.C., and 7, Albemarle-street, W.*
- 1845 Mackenzie, Right Hon. Holt, F.R.S. *Athenæum Club, S.W.*; and 28, *Wimpole-street, W.*
- 1872 Mackenzie, J. J., Esq. *Sidney-lodge, Wimbledon-common.*
- 1860 *Mackenzie, James T., Esq.
- 1863 Mackenzie, John H., Esq. *Wallington, Carshalton, Surrey.*
- 1864 *Mackeson, Edward, Esq. 13, *Hyde-park-square, W.*
- 1862 Mackinlay, D., Esq. *Oriental Club, W.*
- 1867 Mackinlay, John, Esq., J.P., M.I.C.E., Chief Engineer and Inspector of Machinery, H.M. Dockyard, and Surveyor to the Port, Bombay. *Care of Charles Bannerman, Esq., 193, Camberwell-new-road, Kennington, S.*
- 1864 Mackinnon, C. D., Esq. *Care of Messrs. J. Clinch and Sons, 31, Abchurch-lane, E.C.*
- 1855 1470 *Mackinnon, Wm. Alex., Esq., M.P., F.R.S. 4, *Hyde-park-place, W.*
- 1865 *Mackinnon, W., Esq. *Balinskil-by-Harbert, Argyleshire.*
- 1872 Mackintosh, Alex, Esq. 9, *Tallot-square, Hyde-Park, W.*
- 1860 Mackirdy, Major-Gen. Elliot, 69th Regiment. *U. S. Club, S.W.*
- 1871 MacLagan, Colonel Robert, R.E. *Care of Messrs. Crawford, Colvin, and Co., 71, Old Broad-street, E.C.*
- 1871 MacLaine, Marloch G., Esq. 6, *Princes-square, Bayswater, W.*
- 1860 Maclean, William Crighton, Esq., F.G.S. 31, *Cumperdown-pl., Great Yarmouth.*

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1859	MacLeay, George, Esq. <i>Pendell-court, Bletchingley.</i>
1870	MacLeod, Lieut. Angus, R.N. <i>H.M.S. "Excellent," Portsmouth.</i>
1871	*McClare, Joseph Henry, Esq. 2, <i>Woodland-terrace, Manchester.</i>
1855	1480 MacLure, Andrew, Esq. <i>MacLure, Macdonald, and Macgregor, 37, Wallbrook, E.C.</i>
1861	MacLure, John William, Esq. <i>Fallosfield, near Manchester.</i>
1860	Macmillan, Alex., Esq. 16, <i>Bedford-street, Covent-garden, W.C.</i>
1871	Macnab, Duncan Macpherson, Esq. <i>Union Club, S.W.</i>
1855	Macnab, John, Esq. <i>Findlater-lodge, Trinity, near Edinburgh.</i>
1868	Macnair, George, Esq. <i>Oriental Club, Hanover-square, W.</i>
1871	Macpherson, Daniel, Esq. <i>Cádiz; and 1, King-street, St. James's, S.W.</i>
1871	Macpherson, Hugh Martin, Esq. <i>E. I. United Service Club, S.W.</i>
1861	Macpherson, William, Esq. <i>Rustic-house, Putney.</i>
1870	Macturk, John, Esq. <i>Tillicoultry.</i>
1871	1490 MacVicar, Lt. Jno. A., 93rd Highlanders. 9, <i>Sussex-pl., Regent's-park, N.W.</i>
1863	McArthur, Alex., Esq. <i>Raleigh-hall, Brixton-rise, Brixton, S.</i>
1867	McArthur, William, Esq. 1, <i>Guyler-houses, Brixton-rise, S.</i>
1860	McClintock, Admiral Sir Francis Leopold, R.N.S. <i>United Service Club, S.W.; and H.M. Dockyard, Portsmouth.</i>
1861	*McConnell, W. R., Esq., Barrister-at-Law. 12, <i>King's-Bench-walk, Temple, E.C.; and Charleville, Belfast.</i>
1862	McCosh, John, Esq., M.D. <i>Junior United Service Club, S.W.</i>
1866	McNair, Major John F. A., R.A. 57, <i>Portsmouth-road, Maida-vale, W.</i>
1855	*McClure, Admiral Sir Robert J. le M., C.B. <i>Chipperfield, Herts; and Athenæum Club, S.W.</i>
1865	McDonald, James, Esq. <i>Oriental Club, Hanover-square, W.</i>
1865	McEuen, D. P., Esq. 24, <i>Pembroke-square, Baywater, W.</i>
1867	1500 McGregor, Duncan, Esq. <i>Clyde-place, Glasgow.</i>
1872	Magrath, Colonel John R., Madras Artillery, Ret. <i>Percy-house, Horn-park, Lee, S.E.; and East India U. S. Club, 14, St. James's-square.</i>
1869	McGrigor, Alexander Bennett, Esq. 19, <i>Woodside-terrace, Glasgow.</i>
1866	*McIvor, W. G., Esq., Sup. of <i>Chinchona Plantations, Ootacamund, Madras. Care of Mr. E. Bumpus, Holborn-bars, E.C.</i>
1858	McKerrell, Robert, Esq. 45, <i>Interness-terrace, W.; and Mauritius.</i>
1873	McKerrie, P. H., Esq. 26, <i>Pembridge-villas, Baywater, W.</i>
1868	McClean, Frank, Esq., M.A., C.E. <i>Ferncliffe, Tunbridge-wells.</i>
1867	*McLenn, Hon. John. <i>Oamaru, New Zealand. Care of Messrs. Redfern, Alexander, and Co., 3, Great Winchester-street-buildings, E.C.</i>
1870	McLeod, Major-Gen. W. C. 14, <i>St. James's-square, S.W.</i>
1852	McLeod, Walter, Esq. <i>Head Master of the Royal Military Asylum, Chelsea, S.W.</i>
1839	1510 McNeil, The Right Hon. Sir John, G.C.B. <i>Granton, near Edinburgh.</i>
1859	Maitland, Geo. Gammie, Esq. <i>Shotover-house, Wheatley, Oxon.</i>
1871	Major, Henry, Esq., R.A. <i>Sherwood-house, Mansfield-road, Nottingham.</i>
1845	*Major, Richard Henry, Esq., F.S.A. <i>Athenæum Club, S.W.; and British Museum, W.C.</i>

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- 1868 •Makins, Henry F., Esq. 19, *Prince of Wales-terrace, Kensington-palace, W. ; and Reform Club, S. W.*
- 1858 Malby, John Walter, Esq. 15, *Richmond-villas, Seven-sisters'-rd., Holloway, N.*
- 1853 1520 Malby, Thomas, Esq. 2, *Park-villas, Seven-sisters'-road, Holloway, N.*
- 1862 •Malcolm, Major Edward Donald, R.E. *Chatham.*
- 1863 Malcolm, James, Esq. 22, *Prince's-gate, Knightsbridge, W.*
- 1843 •Malcolm, W. E., Esq. *Burnfoot, Langholme, near Carlisle.*
- 1873 Malleson, Colonel G. B. *Care of Coutts and Co., Strand, W.C.*
- 1853 •Mallet, Chas., Esq. *Audit-office, W.C. ; and 7, Queensbro'-ter., Baywater, W.*
- 1871 Maltran, The Baron H. de. 2, *Albertstrasse, Wiesbaden. Care of Messrs. Langstaff, Ehrenberg, and Co., 60, King William-street, E.C.*
- 1870 Man, Captain J. Alexander (Commissioner of Customs for Formosa, &c.) *Care of P. J. King, Esq., 10, St. Stephen's-square, Baywater, W.*
- 1872 Man, Captain William. *Woodbridge, Suffolk ; and Junior Carlton Club, W. Care of B. F. Stevens, 17, Henrietta-street.*
- 1872 Man, William, Esq. *Woodford, Essex.*
- 1860 Mann, James Alexander, Esq., M.R.A.S. *Enfield-villa, Enfield.*
- 1866 Mann, Robert James, Esq., M.D. 5, *Kingsdown-villas, Wandsworth-common, S.W.*
- 1866 Manners, George, Esq., F.S.A. *Lansdowne-road, Croydon.*
- 1868 Manners-Sutton, Graham, Esq., 7, *Gloucester-terrace, Hyde-park, W.*
- 1856 1530 Manning, Frederick, Esq. *Byron-lodge, Leamington ; and 8, Dover-street, W.*
- 1864 •Mansell, Captain A. L. *Hydrographic-office, Admiralty, S.W.*
- 1869 Mantell, Sir John Hes. *Swinton-park, Manchester ; and Windham Club, S.W.*
- 1859 Mantell, Walter Baldock Durant, Esq. *Wellington, New Zealand. Care of E. Stanford, Esq.*
- 1873 Mantle, Wm. John, Esq. *Northgate, Lincoln.*
- 1869 March, Edward Bernard, Esq., H.M. Consul, Fiji Islands. 12, *Buckingham-street, Strand, W.C.*
- 1873 Margary, Aug. R. Esq. 14, *Palace-garden-terrace, W.*
- 1871 Margetta, William G., Esq. *Allamira, Stonebridge, Willesden, N.W.*
- 1872 Margoschis, John Thomas, Esq. *Trichinopoly, South India. Care of Arthur Margoschis, Esq., St. Augustine's College, Canterbury.*
- 1860 Mariette, Prof. Alphonse, M.A. 27, *St. Stephen's-square, Baywater, W.*
- 1854 1540 Markham, Clements Robert, Esq., C.B. *India-office, S.W. ; 21, Eccleston-sq., S.W. ; and Athenaeum Club, S.W.*
- 1864 Marsden, Rev. Canon. *Higher Broughton, Manchester.*
- 1857 Marsh, Matthew Henry, Esq. *Oxford and Cambridge Club, S.W. ; and 41, Rutland-gate, S.W.*
- 1870 •Marsh, Rev. W. R. Tilson, M.A. *Oxford and Cambridge Club, S.W. ; Conservative Club ; and Stretton-manoor, Isle of Ely.*
- 1862 Marshall, J. G. Don, Esq. 6, *The Mount, St. Leonards-on-Sea.*
- 1854 Marshall, James Garth, Esq. *Headingley, near Leeds ; and Monk Cniston, Ambleside.*
- 1862 Marshall, William, Esq. 71, *Mornington-road, W.*
- 1873 Marshall, John, Esq. *Auckland-lodge, Queens'-road, Richmond, S.W.*

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- 1859 •Marsham, The Hon. Robert. 5, *Chesterfield-street, Mayfair, W.*
- 1857 Marshman, J. C., Esq. 7, *Kensington-palace-gardens, W.*
- 1871 1550Marten, Elliott, Esq., Vice-Cons. Sarawak. Care of W. T. Marten, Esq., 30, *Great St. Helen's, E.C.*
- 1857 Martin, Francis P. B., Esq.
- 1861 Martin, Henry, Esq. *Sussex-house, Highbury-new-park, N.*
- 1860 •Martin, Richard Biddulph, Esq. *Clarewood, Rickley, S.E.*
- 1862 Martin, Thomas, Esq. 5, *Compton-terrace, N.*
- 1870 Martin, Wm. Coleman, Esq. *Shireoaks, Worksop, Notts.*
- 1870 •Martindale, William, Esq. 66, *Upper Thames-street, E.C.; Gresham Club, E.C.; and Guinsborough Lodge, Leytonstone, Essex.*
- 1871 Mason, Charles, A. J., Esq. 3, *Gloucester-crescent, Hyde-park, W.*
- 1871 Master, Charles Hoskins, Esq. *Barrow-green House, Oxted, near Godstone, Surrey.*
- 1870 Masterman, Edward, Esq. 30, *Threadneedle-street, E.C.; and 27, Clement's-lane, Lombard-street, E.C.*
- 1870 1560Masterman, Edward, jun. Esq. 57½, *Old Broad-street, E.C.; and Walthamstow.*
- 1869 •Matheson, Alexander, Esq., M.P. 33, *South-street, Park-lane, W.; and Ardross Castle, Ross-shire, N.B.*
- 1845 •Matheson, Sir James, Bart., F.R.S. 13, *Cleveland-row, S.W.; and Achany, Bonar-bridge, Sutherlandshire, &c.*
- 1871 Mathew, George Buckley, Esq. Care of Messrs. Roddington and Co., *St. Helen's-place, E.C.*
- 1872 Mathews, William, Esq., M.A. 49, *Harborne-road, Birmingham.*
- 1858 Mathieson, James Ewing, Esq. 77, *Lombard-street, E.C.; and 16, Queen's-gardens, Bayneater, W.*
- 1869 Maude, Col. Francis Cornwallis, R.A., V.C., &c. *Army and Navy Club, S.W.*
- 1868 Mavrogordato, Lucas, Esq. *Belgrave-mansions, Grosvenor-gardens, S.W.; and Messrs. Ralli, Brothers, 25, Finsbury-circus, E.C.*
- 1871 Mawbey, Henry, Esq. 12, *Clare-road, Cotham, Bristol.*
- 1860 •Maxwell, Sir William Stirling, Bart. 10, *Upper Grosvenor-street, W.; and Keir, Dunblane, N.B.*
- 1855 1570May, Daniel John, Esq., R.N., Staff-Commr. Care of Case and Loudensack.
- 1858 Mayer, Joseph, Esq., F.S.A. 68, *Lord-street, Liverpool.*
- 1861 Mayers, William S. F., Esq., Chinese Secretary, H. B. M. Legation, Peking. Care of James West, Esq., 2, *Cowper's-court, Cornhill, E.C.*
- 1862 Mayne, Captain Richard Charles, R.N., C.B. 80, *Chester-square, S.W.*
- 1858 Mayo, Captain John Pole. *Army and Navy Club, S.W.*
- 1867 Mayson, John S., Esq., J.P. 25, *Dickinson-street, Manchester.*
- 1872 McCall, John, Esq. 17, *Gracechurch-street, E.C.*
- 1863 Meade, The Hon. Robert Henry. Colonial-office, *S.W.; and 3, Belgrave-sq., S.W.*
- 1872 Measom, George Samuel, Esq. *St. Maryaret's, Isleworth.*
- 1871 Medhurst, W. H., Esq. *Athenæum Club.*
- 1862 1580•Medlicott, Commander Mervyn B., R.N. Care of Messrs. Woodhead.
- 1854 Melvill, Major-Gen. Sir Peter Melvill, Mil. Sec. to the Bombay Gov. 27, *Palmeira-square, Brighton.*

Year of
Election.

- 1838 Melvill, Philip, Esq., F.R.A.S. *Ethy-house, Lostwithiel, Cornwall.*
- 1871 Mercer, Henry C., Esq., B.A. *Denham-lodge, Uxbridge.*
- 1858 Merewether, Colonel Sir William Lockyer, K.C.S.I., C.B. *Kurrachee. Care of King and Co., 65, Cornhill, E.C.*
- 1842 *Merivale, Herman, Esq., C.B., Under Sec. of State for India. *India-office, S.W.; and 13, Cornwall-gardens, South Kensington, W.*
- 1871 Merritt, Douglas, Esq. *Lyndhurst, Irvington-on-Hudson, New York, U.S. Care of H. T. Thorlock, Esq., 9, Canning-place, Liverpool.*
- 1866 Mesiter, Charles A., Esq. *Barwick, near Teosil, Somerset.*
- 1871 Mesum, Josiah Young, Esq., R.N. (Controller of H.M.'s Packet Service). *General Post-office, E.C.; and Bedford-villa, Sydenham-road, Croydon.*
- 1867 Metcalfe, Frederic Morehouse, Esq. *Wisbech, Cambridgeshire.*
- 1871 1590 Methven, Captain Robert. *44, Chester-square, S.W.*
- 1837 *Mexborough, John Chas. Geo., Earl of. *33, Dover-street, W.; and Methley-park, near Leeds.*
- 1835 *Michell, Lieut.-Colonel J. E., R.N.A.
- 1838 Michell, Robert, Esq. *India-office, S.W.*
- 1863 *Miche, A., Esq. *26, Austin-friars, E.C.*
- 1848 Middleton, Rear-Admiral Sir G.N. Broke, Bart. *H.M.S. 'Hero,' Sheerness; and Broke-hall, Suffolk.*
- 1870 *Midwinter, William Colpoys, Esq. *St. Michael's Rectory, Winchester; and Akyab, British Burmah.*
- 1868 *Miers, John William, Esq., C.E. *74, Addison-road, Kensington, W.*
- 1859 Miland, John, Esq. *Choirville, Lonschen-road, Wembleton.*
- 1866 Mildmay, Capt. Herbert St. John (Rifle Brigade). *19, Charles-street, Berkeley-square, W.*
- 1872 1600 Miles, Captain Samuel Barrett (Bombay Staff Corps), Political Agent in Mekran. *Care of Messrs. Trübner, 60, Paternoster-row, E.C.*
- 1831 *Miller, Captain Henry Matthew, R.N. *The United Service Club, S.W., and Fernside, Sevenoaks.*
- 1868 Miller, Robert Montgomerie, Esq. *Culcerden-grove, Tunbridge-wells.*
- 1853 *Miller, Capt. Thomas, R.N. *H.M.S. 'Royal George,' and U. S. Club, S.W.*
- 1861 Milligan, Joseph, Esq. *15, Northumberland-street, W.C.*
- 1857 Mills, Arthur, Esq. *34, Hyde-park-gardens, W.*
- 1863 *Mills, John R., Esq. *Kingswood-lodge, Tunbridge-wells.*
- 1864 Mills, Rev. John. *40, Lonsdale-square, N.*
- 1860 Milman, Lieut.-Colonel Everard Stepney, Retired, Royal Artillery. *9, Berkeley-square, W.*
- 1866 Milne, Admiral Sir Alex., K.C.B., G.C.B. *United Service Club, S.W.*
- 1867 1610 Milner, Rev. John, B.A. *H.M.S. 'St. Vincent.'*
- 1863 *Milton, Viscount, M.P. *17, Grosvenor-street, W.*
- 1862 *Mitchell, George, Esq. *22, Bolton-street, Piccadilly, W.*
- 1859 Mitchell, Sir William. *6, Hyde-park-gate, Kensington-gate, W.*
- 1872 Mitchell, William Aug., Esq. *Marlboro'-villa, Lea-bridge-road, E.*

Year of
Election.

- 1873 Mitford, A. B., Esq. 1, *Albert-terrace, Knightsbridge*; and *Travellers' Club*.
- 1851 *Mocatta, Frederick D., Esq. 9, *Connaught-place, W.*
- 1853 Moffatt, George, Esq. 103, *Eaton-square, S. W.*
- 1868 Moffitt, John, Esq. "*General Register Office of Seamen*," 6, *Adelaide-place, E.C.*
- 1873 Moir, Macrae, Esq., M.A., &c. *Braefit, S. Hampstead, N.W.*; *Reform Club*; *The Century Club*; *The Highland Society of London*; *The Caledonian Society of London*; *The Scottish Corpor. Hall, E.C.*; and 4, *Brick-Court, Temple, E.C.*
- 1873 1620 Moleyns, Major T. A. de, R.A. *Woolwich*.
- 1861 Mollison, Alexander Fullerton, Esq. *Woodcote, Tunbridge-wells*.
- 1870 Moneta, Don l'ompeio (Chief Engineer, Argent. Repub.). *Buenos Ayres*.
- 1871 Montagu, Jno. M. P., Esq. *Downe-hall, Brighthelm, Dorset*, and *Union Club, S. W.*
- 1862 *Montague, Major Horace. 9, *Woburn-square, W.C.*
- 1830 *Montefiore, Sir Moses, Bart., F.R.S., F.R.S.N.A. 7, *Grosvenor-gate, Park-lane, W.*; and *East-cliff-lodge, Ramsgate*.
- 1859 Montgomerie, Major T. G., Engrs., 1st Assist. Trig. Survey. *Care of Messrs. Alexander Fletcher & Co., 10, King's-arms-yard, Moorgate-street, E.C.*
- 1860 Montgomery, Robert Mortimer, Esq.
- 1865 Montgomery, Sir Robert, K.C.B., G.C.S.I. 7, *Cornwall-gardens, Queen's-gate, W.*
- 1839 Moody, General R. C., R.E. *Caynham-house, near Ludlow, Shropshire*.
- 1857 1630 *Moor, Rev. Allen F., M.A., F.R.S. *St. Clement's Vicarage, Truro*.
- 1863 Moore, H. Byron, Esq. *Survey-office, Melbourne, Australia*.
- 1861 Moore, John Carrick, Esq., F.R.S. *Cornwall, Wiltshire*; *Geological Society, W.C.*; and 23, *Dolton-street, W.*
- 1870 Moore, John, Esq. 36, *Mark-lane, E.C.*
- 1870 *Moore, Joseph, Esq. *Brockwell-house, Dulwich*.
- 1872 Mora, Diego d'Usson, Esq. 2, *Brook-street, Cheetham, Manchester*.
- 1870 Moran, Benjamin, Esq. 20, *Norfolk-terrace, Bayswater, W.*; and 5, *Westminster-chambers, Victoria-street, S. W.*
- 1872 *Morant, Capt. J. L. L. (R. Mil. Eng.). *Mountstuart, Ootacamund, Nilgcherries, Madras Presidency*. *Care of Messrs. Thresher and Glenny, 152, Strand, W.C.*
- 1863 More, R. Jasper, Esq. *Linley-hall, Salop*.
- 1869 *Morgan, Delmar, Esq. 19, *Queen's-gardens, Hyde-park, W.*
- 1864 1640 Morgan, D. L., Esq., Deputy Inspector-General, R.N. 9, *Spring-gardens, S. W.*
- 1861 Morgan, Junius Spencer, Esq. 13, *Prince's-gate, Hyde-park, W.*
- 1856 Morland, Lieut. Henry, late R.N. *Assistant Dockmaster, &c., Bombay*.
- 1839 *Morris, Charles, Esq. *University Club, S. W.*
- 1871 Morris, Edwd. Ellis, Esq. *Bedfordshire Middle-class Public School, Bedford*.
- 1868 Morris, Eugene, Esq. *Care of M. Jull, Esq., 40, Jermyn-street, W.*
- 1871 *Morrison, Alf., Esq. 16, *Carlton-house-terrace, S. W.*
- 1863 Morrison, Colonel J. C. D. 40, *Albion-road, Finchley-road, N. W.*
- 1867 Morrison, Pearson, Esq. *Care of J. E. Dawson, Esq., 52, Moorgate-street, E.C.*
- 1865 Morson, Thomas, Esq. 124, *Southampton-row, Russell-square, W.C.*

Year of
Election.

- 1859 1650 Mower, Robert James, Esq. 45, Bedford-square, W.C.
- 1869 Mott, F. T., Esq. 1, De Montfort-street, Leicester.
- 1861 *Mouat, Frederick J., Esq., M.D., Surgeon-Major and Inspector-General of Prisons, Bengal Army, &c. 12, Durham-villas, Kensington, W.; and Athenæum Club, S. W.
- 1868 *Mounsey, Aug. Henry, Esq. British Embassy, Vienna. Care of R. H. Mounsey, Esq., Castle-street, Carlisle.
- 1871 *Mowatt, James, Esq., M.A. 74, Upper Gloucester-place, N.W.; and Caius College, Cambridge.
- 1871 *Mozley, H. W., Esq., M.A. Eton College.
- 1858 Mudie, Charles Edward, Esq. Muswell-hill.
- 1858 Mueller, Ferdinand, Esq., M.D., PH.D. Director of the Botanical Gardens, Melbourne. Care of Messrs. Dicks and Co., 37, Soho-square, W.
- 1855 Muir, Thomas, Esq. 24, York-terrace, Regent's-park, N. W.
- 1867 *Muir, Thomas, jun., Esq. Madeira; and 24, York-terrace, Regent's-park, N. W.
- 1869 1660 Müller, Albert, Esq. Eaton-cottage, South Norwood, S.
- 1869 Munton, Francis Kerridge, Esq. 21, Montagu-street, Russell-square, W.C.
- 1868 *Murchison, John H., Esq. Junior Carlton Club, S. W.
- 1859 Murchison, Kenneth R., Esq. 24, Chapel-street, Park-lane, W.; and Junior United Service Club.
- 1830 *Murdoch, Thomas W. C., Esq. 8, Park-street, Westminster, S. W.; and River-bank, Putney, S. W.
- 1860 Murray, George J., Esq. Furbrook-house, Cosham, Hants; and Junior Carlton Club, S. W.
- 1872 *Murray, G. S. D., Esq. Care of J. W. Larkings, Esq., The Firs, Lee, S.E.
- 1868 *Murray, Henry, Esq. Hong-Kong. Care of Messrs. Jardine, Matheson, and Co., 3, Lombard-street, E.C.
- 1844 *Murray, James, Esq.
- 1830 Murray, John, Esq. 50, Albemarle-street, W.; and Newstead, Wimbledon, S. W.
- 1860 1670 *Murray, Lt. W., 68th Beng. N. Inf., Topo. Assist. G. Trig. Survey. Mussoorie, India. Care of Messrs. H. S. King and Co.
- 1870 Murray, T. Douglas, Esq. 34, Portland-place, W.
- 1870 Murray, William Vaughan, Esq., M.R.I., &c. 4, Westbourne-crescent, Hyde-park, W.
- 1865 Mussy, H. G. de, Esq., M.D. 5, Wimpole-street, Cavendish-square, W.
- 1865 Nairne, P. A., Esq. 2, Groce-hill, Camberwell, S.
- 1868 Napier, of Magdala, Lord, G.C.B., F.R.S.
- 1861 Napier, William, Esq. Ardmore-lodge, Spring-grove.
- 1870 Napier, Wm. Jno. Geo., Esq. (Master of Napier.) Thatched-house Club, St. James's-street, S. W.; and Thirlestone-castle, Selkirkshire.

Year of Election.	
1871	Nares, Captain G. S., R.N. <i>Care of the Hydrographer, Admiral G. H. Richards.</i>
1870	Nash, Samuel, Esq., B.A., &c. 44, <i>Renshaw-street, Liverpool.</i>
1859	1680*Nasmith, Capt. David J., 1st Assist. Trigonometrical Survey. 5, <i>Charlotte-street, Edinburgh.</i>
1872	Naylor, Geo., Esq. (Surgeon). 3, <i>Savile-row, W.</i>
1857	*Nesbitt, Henry, Esq. 12, <i>Victoria-villas, Kilburn, N. W.</i>
1869	Neville, Lieut.-Col. Edward. 30, <i>Clarges-street, Piccadilly, W.</i>
1870	Newall, Wm. Johnstone, Esq. 33, <i>South-street, Park-lane, W.</i>
1868	Newbatt, Benjamin, Esq., F.R.S., &c. 7, <i>Vicarage-gardens, Campden-hill, W.</i>
1867	Newdigate, Lieut.-Col. Francis W. (Coldstream Guards). 26, <i>Seymour-street, W.; and Byrkley-lodge, Needwood Forest, Barton-upon-Trent.</i>
1856	Newman, Thomas Holdsworth, Esq. 9, <i>St. Cumberland-place, Hyde-park, W.</i>
1872	Newton, Wm., Esq. 11, <i>Mitre-court, Temple, E.C.</i>
1870	Nicholas, W., Esq. 31, <i>Lansdowne-road, Dulston, E.</i>
1870	1690Nicholl, Henry John, Esq. 16, <i>Hyde-park-gate, W.</i>
1870	Nichols, James, Esq. 22, <i>Laurence Pountney-lane, E.C.; and "The Mount," Kenley, Surrey.</i>
1865	*Nichols, Robert C., Esq. 5, <i>Sussex-place, W.</i>
1856	Nicholson, Sir Charles, Bart., D.C.L., Chancellor of the University, Sydney. 26, <i>Devonshire-place, Portland-place, W.</i>
1868	Nicol, Geo. Wm., Esq. <i>Care of Messrs. Glyn, Mills, & Co., 67, Lombard-st. E.C.</i>
1866	Nicol, James D., Esq., M.P. 13, <i>Hyde-park-terrace, Cumberland-gate, W.</i>
1869	*Nicol, Robert, Esq. <i>Reform Club, S. W.; and Westminster-palace-hotel, S. W.</i>
1868	Nicol, Wm., Esq. 41, <i>Victoria-st., S. W.; and Fawcayde, Kenneff, Kincardine.</i>
1871	Nicols, Arthur Robert, Esq. 11, <i>Church-row, Hampstead, N. W.</i>
1836	Nicolson, Vice-Admiral Sir Frederick Wm. Erskine, Bart., C.B. 15, <i>William-street, Lowndes-square, S. W.</i>
1873	1700Nimmo, Rev. R., B.A., R.N. <i>Mill-house, Grantchester, near Cambridge, and H.M.S. 'Audacious,' Hull.</i>
1864	Nissen, H. A., Esq. <i>Mark-lane, E.C.</i>
1858	Nix, John H., Esq. 77, <i>Lombard-street, E.C.</i>
1857	*Nolloth, Captain Matthew S., R.N. 13, <i>North-terrace, Comberwell, S.E.; and United Service Club, S. W.</i>
1865	Norman, H. J., Esq. 106, <i>Fenchurch-street, E.C.</i>
1872	Norris, Charles, Esq. 124, <i>Wood-street, E.C.; and Mariachal-road, Lee, Kent.</i>
1860	Norris, Harry, Esq. <i>Colonial-office, S. W.; and 4, Little St. James's-street, S. W.</i>
1861	North, Alfred, Esq. 23, <i>Lansdowne-crescent, Notting-hill, W.</i>
1865	Northumberland, Algernon George, Duke of. <i>Northumberland-house, S. W.</i>
1862	Notman, Henry Wilkes, Esq. 7, <i>Great Marlborough-street, W.</i>
1862	1710Nourse, Henry, Esq. <i>Conservative Club, S. W.</i>
1858	*Oakeley, R. Banner, Esq. 13, <i>Ryder-street, St. James's, W.</i>
1872	Oates, Frank, Esq. <i>Meauwood-side, near Leeds.</i>
1867	O'Brien, James, Esq. 109, <i>Belgrave-road, Pimlico, S. W.; and Clare, Ireland.</i>

Year of Marriage	
1858	Ogilvie, Edward D., Esq. <i>Fulfillar, Clarence-river, New South Wales. Care of Messrs. Marryat and Sons, Lawrence Pountney-lane, E.C.</i>
1863	Ogilvy, Col. Thos., 23, Grafton-st., Piccadilly, W.; and Ruthven, Forfarshire, N.B.
1873	Older, W. Aug., Esq. <i>Carrington-lodge, Richmond.</i>
1861	Oldershaw, Capt. Robert Piggott. 74, Warwick-square, Belgrave-road, S.W.
1872	Oldfield, Captain Rudolphus, R.N. <i>United Service Club, S.W.</i>
1870	Oldham, Henry, Esq., M.D. 26, Finsbury-square, E.C.
1870	1720 Oldham, Robert W., Esq. <i>Lloyd's, E.C.</i>
1855	Oliphant, Laurence, Esq. <i>Athenaeum Club, S.W.</i>
1866	Oliver, Captain S. P., 12th Brigade R.A. <i>Care of Rev. W. Oliver, Boring-rectory, Ongar, Essex.</i>
1845	*Ommanney, Admiral Erasmus, C.B., F.R.S., F.R.A.S. 6, Talbot-square, Hyde-park, W.; and <i>United Service Club, S.W.</i>
1838	*Ommanney, W. M., Esq. <i>Blackheath, S.E.</i>
1867	Ormathwaite, John Benn-Walsh, Lord. 28, Berkeley-square, W.
1853	Osborn, Sir George R., Bart. <i>Travellers' Club, S.W.; and Chicksand-priory, Beds.</i>
1856	Osborn, Capt. Sherard, C.B., F.R.S. 6, Gloucester-terrace, W.; <i>Athenaeum and Reform Clubs, S.W.; and 38, Old Broad-street, E.C.</i>
1870	Osborn, Commander Noel, R.N. <i>Junior United Service Club, S.W.</i>
1861	*Osborne, Lieut.-Col. Willoughby. <i>Political Agent, Bhopal, Schinva, India.</i>
1852	1730 Oswell, William Cotton, Esq. <i>Groombridge, Kent.</i>
1860	*Ouvry-North, Rev. J. <i>East Acton, Middlesex, W.</i>
1870	*Overbeck, M. the Chev. G. de. <i>Hong-Kong. Care of Messrs. King and Co., 65, Cornhill, E.C.</i>
1844	*Overstone, Samuel, Lord, M.A., M.R.I. 2, Carlton-gardens, S.W.; and <i>Wickham-park, Surrey.</i>
1868	Owden, Thomas S., Esq. <i>Mount-pleasant, Philip-lane, Tottenham.</i>
1873	Page, George Gordon, Esq., C.E. 4, Raymond-buildings, Gray's-inn, W.C.
1853	Pakington, Right Hon. Sir John Somerset, Bart., M.P., F.R.S. 41, Eaton-square, S.W.; and <i>Westwood-park, Droitwich, Worcestershire.</i>
1868	Paliologus, William Thomas, Esq. <i>Care of Messrs. McGregor and Co., Charles-street, S.W.</i>
1870	Palmer, F. J., Esq., R.N. 8, Cullum-street, E.C.
1865	*Palmer, Captain George, R.N. <i>H.M.S. 'Rosario,' Australia; and Cavers, Hawick, Roxburghshire, N.B.</i>
1870	1740 *Palmer, John Linton, Esq., Surg. R.N. 40, Rock-park, Rockferry, Cheshire.
1862	Palmer, Rev. Jordan, M.A., F.S.A., Chaplain to St. Ann's Royal Society. <i>Streatham, S.</i>
1873	Palmer, J. Horsley, Esq. <i>Mulgrave-house, Fulham.</i>
1838	*Palmer, Samuel, Esq.
1872	Palmer, Joseph, Esq., B.A., &c. <i>Wells, Somerset.</i>
1869	*Palmer, T. G. A., Esq. 5, Paper-buildings, Inner Temple, E.C.
1870	Pannel, Charles S., Esq. <i>Walton-lodge, Torquay.</i>
1865	*Papengouth, Oswald C., Esq., C.E. <i>Care of W. Hornibrook, Esq., 6, Regent's-square, W.C.</i>

Year of
Election.

- 1870 Parfitt, W. S., Esq., C.E. *Montevideo. Care of Mrs. Parfitt, Devizes, Wilts.*
- 1863 *Paris, H.R.H. le Comte de. *Claremont.*
- 1864 1750 Parish, Captain A. *Bembridge, Isle of Wight.*
- 1849 *Parish, Capt. John E., R.N. *Army and Navy Club, S.W. Care of Messrs. Stihell.*
- 1833 *Parish, Sir Woodbine, K.C.H., F.R.S., &c. *Quarry-house, St. Leonards-on-Sea.*
- 1866 Parker, Captain Francis G. S., 54th Regiment, F.G.S., A.L.C.E. *Barracks, Chatham.*
- 1862 Parker, Robert Deane, Esq. *Barham, Canterbury.*
- 1850 Parkes, Sir Harry S., K.C.N., &c. *Care of King & Co, 45, Pall-mall, S.W.*
- 1850 *Parkyns, Mansfield, Esq., F.R.S. *Arthur's Club, St. James's-street, S.W.; and 59, Prince's-square, Haywater, W.*
- 1872 *Parry, Francis, Esq. *Junior Athenæum Club, 102, Piccadilly, W.*
- 1872 Parry, Edward, Esq. *284, Camden-road, N.W.*
- 1859 Pasteur, Marc Henry, Esq. *38, Mincing-lane, E.C.*
- 1867 1760 Paterson, John, Esq. *19A, Coleman-street, City, E.C.*
- 1857 Paton, Andrew A., Esq. *H.B.M.'s Vice-Consul, Missolonghi, Greece.*
- 1871 Patterson, Jas. Wilson, Esq. *Rosebud, Haverley, Baltimore Co., U.S.A.*
- 1863 Pattinson, J., Esq. *21, Broad-street, E.C.*
- 1868 Paul, J. H., Esq., M.D. *Camberwell-house, Camberwell, S.*
- 1858 Paul, Joseph, Esq. *Ormonde-house, Ryde, Isle of Wight.*
- 1872 Paxton, Robert Chas., Esq. *24, Stafford-terrace, Phillimore-gardens, W.*
- 1847 *Paynter, William, Esq., F.R.A.S. *21, Belgrave-square, S.W.; and Camberne-house, Richmond, Surrey, S.W.*
- 1853 Peacock, George, Esq. *Starcross, near Exeter.*
- 1872 Pears, Rev. S. A., D.D., Head Master of Repton School. *Repton, Derbyshire.*
- 1863 1770 Pearse, Captain R. B., R.N. *9, Hyde-park-street, W.*
- 1863 Pearson, Fred., Esq.
- 1853 *Peckover, Alexander, Esq. *Wisbeach.*
- 1860 *Peck, Henry William, Esq., M.P. *Care of G. Thorpe, Esq., 21, Eastcheap, E.C.*
- 1872 *Peel, Capt. Francis. *Dilston-house, Upper Norwood.*
- 1858 Peel, Sir Robert, Bart., M.P. *4, Whitehall-gardens, S.W.; and Drayton-manoor, Tamworth.*
- 1868 *Pender, John, Esq. *18, Arlington-street, W.*
- 1863 *Pennant, Colonel S. S. Douglas. *Penrhyn-castle, Bangor, N.B.*
- 1859 *Penrhyn, Lord. *Penrhyn-castle, Bangor.*
- 1853 Percy, Major-General the Hon. Lord Henry M. (Guards). *40, Eaton-square, S.W.*
- 1865 1780 Pereira, Francisco E., Esq. *Care of Messrs. Richardson, 13, Pall-mall.*
- 1860 Perkins, Frederick, Esq. *Mayor of Southampton.*
- 1865 Perkins, William, Esq. *Rosario, Argentine Republic. Care of the Central Argentine Railway Co., Palmerston-buildings, Old Broad-street.*
- 1859 Perry, Sir Erskine, Member Indian Council. *38, Eaton-place, S.W.*

Year of Election.	
1855	Perry, Gerald R., Esq., British Consulate, Stockholm.
1859	Perry, Sir William, H.B.M.'s Consul-General, Venice. <i>Athenæum Club, S.W.</i>
1862	*Perry, William, Esq. 9, Warwick-road, Upper Clapton, N.E.
1862	Peter, John, Esq. 12, Stratton-street, Piccadilly, W.
1857	*Peters, William, Esq.
1860	*Petherick, John, Esq. 48, Lancaster-road, Westbourne-park, W.
1860	1790 Petrie, Major Martin, 97th Regiment. <i>Manover-lodge, Kensington-park, W.</i>
1871	Petter, G. Wm., Esq. <i>Streatham-grove, S.</i>
1866	Pharazyn, Robert, Esq. <i>Wellington, New Zealand. Care of Messrs. Seale and Rogers, 24, Mark-lane, E.C.</i>
1867	Phayre, Maj.-Gen. Sir Arthur, C.B., K.C.S.I. <i>E. India United Service Club, S.W.</i>
1854	Phelps, William, Esq. 18, Montague-place, Russell-square, W.C.
1862	*Phené, John Samuel, Esq., F.R.S. 5, Carlton-terrace, Oakley-street, S.W.
1860	Phillip, George, Esq. 32, Fleet-street, E.C.
1865	Phillips, Edward B., Esq. 105, Onslow-square, S.W.
1872	Phillips, Sutherland R., Esq., M.D. <i>Exminster, Exeter.</i>
1857	Phillimore, Captain Augustus, R.N. <i>Hurley Manor-house, Great Marlow; and United Service Club, S.W.</i>
1859	1800 Phillimore, Charles Bagot, Esq. <i>Hurley Manor-house, Great Marlow; and India-office, S.W.</i>
1860	Phillimore, Wm. Brough, Esq., late Capt. Grenadier Guards. 5, John-street, <i>Berkeley-square, W.</i>
1854	Phillips, Major-General Sir B. Travell. <i>United Service Club, S.W.</i>
1869	Phillips, Edwd. Aug., Esq. <i>Chimtry-lodge, 34, Abbey-road, St. John's-wood, N.W.</i>
1871	Philpott, Edward P., Esq., M.D., LL.D. <i>Poole, Dorsetshire.</i>
1871	Pickersgill, Wm. Cunliffe, Esq. <i>Blindon-hall, Bexley, Kent.</i>
1871	Pierce, Josiah, Esq. 19, Harley-street, W.
1869	Piggot, John, jun., Esq., F.R.S., &c. <i>The Elms, Ulting, Maldon, Essex.</i>
1870	Pigott, Robt. Turtle, Esq. <i>Torrington-villas, Lee, Kent; and 36, Southampton-street, Strand, W.C.</i>
1864	*Pigou, F. A. P., Esq. <i>Dartford, Kent.</i>
1852	1510 *Pike, Captain John W., R.N. <i>United Service Club, S.W.</i>
1855	Pilkington, James, Esq. <i>Blackburn.</i>
1855	Pilkington, William, Esq. <i>War-office.</i>
1852	*Pim, Captain Bedford C. T., R.N. <i>Belsize-square, Hampstead, N.W.; and Senior and Junior United Service Club, S.W.</i>
1870	Pimblett, James, Esq. <i>Tutenhill, *Burton-on-Trent.</i>
1859	Pinney, Colonel William. 30, <i>Berkeley-square, W.</i>
1867	Plant, Nathaniel, Esq. <i>Hotel Exchange, Rio de Janeiro; and De Montfort-house, Leicester.</i>
1871	Platt, Lieut.-Colonel Chas. Rowley. 4, <i>Dolton-street, Piccadilly, W.</i>
1872	Plalster, W. H., Esq., M.R.C.S., &c. <i>Tottenham, Middlesex.</i>
1865	Player, John, Esq. 22, <i>Carpenter-road, Edgbaston, Birmingham.</i>
1860	1820 Playfair, Lieut.-Col. Robert Lambert. H.B.M. Consul-General, Algiers. <i>Care of Messrs. H. S. King and Co., 45, Pall-mall, S.W.</i>

Year of
Election.

- 1866 Plowden, Charles C., Esq. *Belgrave-mansions, Grosvenor-gardens, S.W.*
- 1858 •Plowes, John Henry, Esq. 39, *Fork-terrace, Regent's-park, N.W.*
- 1870 Plunkett, Major-Gen. the Hon. Charles Dawson. *United Service Club, S.W.*
- 1855 •Pollexfen, Captain J. J. *India.*
- 1866 •Pollington, John Horace, Viscount. 8, *John-street, Berkeley-square, W.*
- 1835 •Ponsonby, The Hon. Frederick G. B. 3, *Mount-street, Grosvenor-square, W.*
- 1860 Pook, Captain John. 6, *Colfe's-villas, Lewisham-hill, S.E.*
- 1870 Poole, C. M., Esq., C.E. 8, *Cambridge-terrace, Notting-hill, W.*
- 1857 Pope, Captain Wm. Agnew. *Union Club, S.W.*
- 1863 1830 •Porcher, Captain Edwin A., R.N. 60, *Chester-square, S.W.*
- 1871 •Portal, Wm. Richd., Esq., M.A. *Tonye-house, Lower Norwood, S.*
- 1864 Portugal, Chevalier Joaquim de. 128, *Leadenhall-street, E.C.*
- 1868 Potter, Archibald Gilchrist, Esq. *Woodham-lodge, Lavender-hill, Wandsworth, S.W.*
- 1867 Potter, Wm. H., Esq. *Care of G. T. White, Esq., Kinross, Teotling-common.*
- 1861 •Pounden, Captain Lonsdale. *Junior United Service Club, S.W.; and Brouns-wood, Co. Wexford.*
- 1862 Povah, Rev. John V., M.A. 11, *Endsleigh-street, W.C.*
- 1864 •Powell, F. S., Esq. 1, *Cambridge-square, Hyde-park, W.*
- 1859 •Power, E. Rawdon, Esq. *Retired List, Ceylon Civil Service. Heywood-lodge, Tenby, South Wales; and Thatched-house Club, S.W.*
- 1868 Pownall, John Fish, Esq. 63, *Russell-square, W.C.*
- 1864 1840 Powys, The Hon. C. J. F.
- 1864 Powys, The Hon. Leopold.
- 1870 •Prance, Reginald H., Esq. *Frogna, Hampstead.*
- 1873 Prentice, Edward, Esq. *Care of Rev. H. Waller, The Vicarage, Leytonstone.*
- 1868 Price, Charles S., Esq. *Bryn Derwen, Neath.*
- 1869 Price, F. G. H., Esq. 1, *Fleet-street, E.C.*
- 1852 Price, James Glenie, Esq., Barrister-at-Law. 14, *Clement's-inn, W.C.*
- 1869 Prichard, Htadus Thomas, Esq. 29, *Granville-park, Blackheath, S.E.*
- 1860 •Prickett, Rev. Thomas William, M.A., V.S.A. 11, *Lypiatt-terrace, Cheltenham; and United University Club, Pall-mall East, S.W.*
- 1872 Proctor, Samuel, Esq. (Head Master, Borough Schools, San Fernando, Trinklad). *Care of E. H. Penney, Esq., 17, Lime-street, E.C.*
- 1868 1850 Prideaux, Capt. W. F., Bombay Staff Corps. *Care of Messrs. King and Co., 45, Pall-mall, S.W.*
- 1865 •Pringle, A. Esq. *Yair, Selkirk, N.B.*
- 1855 •Pringle, Thomas Young, Esq. *Reform Club, S.W.*
- 1866 •Prinsep, Edw. Aug., Esq., B.C.S., Commissioner of Settlements in the Punjab. *Umritsur. Care of Messrs. H. S. King and Co., 65, Cornhill, E.C.*
- 1868 Pritchard, Lieut.-Col. Gordon Douglas. *Bengal.*
- 1861 •Prodgers, Edwin, Esq. *The Rectory, Ayott St. Peter's, Herts.*
- 1852 Prout, John William, Esq., M.A., Barrister-at-Law. *Athenaeum Club, S.W.; and Newdon, Middlesex, N.W.*

Year of
Election.

- 1861 Pryce-Jones, John, Esq. *Grove-park School, Wrexham.*
- 1862 *Puget, Lieut.-Colonel J., 8th Hussars. *Lonzford, Ireland.*
- 1872 Puleston, John H., Esq. 2, *Palace-gate, Kensington, W.*
- 1860 1860 Puller, Arthur Giles, Esq. *Athenæum Club, S.W.; Arthur's Club, S.W.; and Youngsbury, Ware.*
- 1872 Punsler, Wm. B., Esq. 1 and 2, *Groveton-villas, Merton-road, Wandsworth, S.W.*
- 1857 Purcell, Edward, Esq., LL.D. *Whitchurch, Monmouth.*
- 1869 Pardon, Lieut. George Frederic, R.N.
- 1865 *Pusey, Sidney E. Bouverie, Esq.
- 1870 Pycroft, Sir Thomas, K.C.S.I. 10, *Kensington-gardens-terrace, Hyde-park, W.*
- 1861 Quin, Lord George. 15, *Belgrave-square, S.W.*
- 1862 Quin, John Thomas, Esq. *Care of Mr. Lambson, Epsom.*
- 1868 Quin, T. Francis, Esq. *Bathurst-house, 418, Clapham-road, Clapham, S.*
- 1871 Radcliffe, Sir Joseph P., Bart. *Cavernhall-castle, Cheadle, Staffordshire.*
- 1858 1870 *Radstock, Graville Augustus, Lord. 30, *Brynmston-square, W.*
- 1869 Rae, Edward, Esq. *Cloughdon, near Birkenhead.*
- 1862 *Rae, James, Esq. 32, *Phillimore-gardens, Kensington, W.*
- 1853 Rae, John, Esq., M.D., LL.D. 2, *Addison-gardens-south, Holland-villas-road, Kensington, W.*
- 1870 Raikes, Francis Wm., Esq. *Junior Carlton Club.*
- 1867 Raleigh, Rev. A., D.D. *Arrian-house, Highbury-new-park.*
- 1871 Ralli, Eustratius, Esq. 93, *Leicester-gate, W.*
- 1871 Ralli, Pandeli, Esq. 17, *Belgrave-square, S.W.*
- 1870 Ralston, W. H. Shedden, Esq., M.A. *British Museum, W.C.*
- 1873 Rambaut, John, Esq., M.D. *The Grange, Godstone, Surrey.*
- 1866 1880 Ramsay, Alex., Esq. 45, *Norland-square, Notting-hill, W.*
- 1866 *Ramsay, Admiral G. *United Service Club, S.W.*
- 1867 Ramsay, John, Esq. *Isbry, N.B.*
- 1867 *Ramsden, Richard, Esq., B.A. *Camp-hill, Nuneaton, Warwickshire.*
- 1869 Randell, Thomas, Esq. 1, *Redcliff-parade, Bristol.*
- 1868 Rankin, William, Esq. *Tiernaleague, Carrindagh, Donegal.*
- 1866 *Ransom, Edwin, Esq. *Kempstone, near Bedford.*
- 1869 Rassam, Hormuzd, Esq., Assistant Political Resident, Aden. *Ailss-park-lodge, Twickenham, S.W.*
- 1859 Ratcliff, Colonel Charles, F.R.S. *Athenæum Club, S.W.; Edgbaston, Birmingham; and Downing College, Cambridge.*
- 1870 Ratcliffe, Rev. Thomas, B.D., &c.
- 1861 1890 Rate, Lachlan Macintosh, Esq. 9, *South Audley-street, W.*
- 1846 Ravenshaw, E. C., Esq., M.R.A.S. *Oriental Club, W.; and 36, Eaton-sq., W.*
- 1859 Ravenstein, Ernest G., Esq. *Alpha-cottage, Lorn-road, Driston, S.W.*
- 1861 Rawlinson, Sir Christopher. *Everleigh-house, Marlborough, Wilts; Manydown-park, Basingstoke; and United University Club, S.W.*

Year of
Election.

- 1844 *Rawlinson, Major-General Sir Henry C., K.C.B., D.C.L., F.R.S. *Athenaeum Club, S.W.*; and 21, *Charles-street, Berkeley-square, W.*
- 1838 Rawson, His Excellency Rawson Wm., C.B., Governor-in-Chief of the Windward Islands. *Barbadoes.*
- 1869 Ray, Captain Alfred William. *The Lodge, Brixton-road, S.W.*
- 1872 Ray, George H., Esq., M.D., Bengal. 14, *St. James's-square, S.W.*
- 1873 Read, Frederick, Esq. 43, *Leinster-square, W.*
- 1869 Read, Lieut.-Col. William Fitzwilliam. *Junior United Service Club, S.W.*
- 1863 1900Reade, W. Winwood, Esq. 13, *Alfred-place, Bedford-square, W.C.*
- 1865 Redhead, R. Milne, Esq. *Springfield, Seedley, Manchester*; *Conservative Club, S.W.*; and *Junior Carlton Club, S.W.*
- 1868 *Redman, John D., Esq., C.E. 6, *Westminster-chambers, Victoria-street, S.W.*
- 1871 Reed, Andrew Holmes, Esq. *Earlsmead, Penge-green, N.*
- 1872 Rees-Phillips, Herbert, Esq. *India-office, S.W.*
- 1859 Reeve, John, Esq. *Conservative Club, S.W.*
- 1866 *Rehden, George, Esq. 2, *Great Tower-street, E.C.*
- 1861 *Reid, David, Esq. 95, *Piccadilly, W.*
- 1857 Reid, Lestock R., Esq. *Athenaeum Club, S.W.*; and 122, *Westbourne-terrace, W.*
- 1871 *Reid, Robert, Esq., B.A., F.Z.S. *Ifley, Oxford.*
- 1861 1910Reilly, Anthony Adams, Esq. *Belmont, Mullingar.*
- 1869 *Reiss, James, Esq. 7, *Cromwell-road-houses, South Kensington, W.*
- 1872 Remfry, Jno., Esq. *St. Helen's, Penze, S.E.*
- 1830 *Rennie, Sir John, C.E., F.R.S., F.S.A.
- 1866 *Rennie, John Keith, Esq., M.A. Camb. 56, *Gloucester-terrace, Hyde-park, W.*
- 1834 *Rennie, M. B., Esq., C.E. *Care of James Rennie, Esq., 9, Molcomb-street, Belgrave-square, S.W.*
- 1864 Reunie, W., Esq. 6, *Great Cumberland-place, W.*
- 1830 *Renwick, Lieutenant, R.E.
- 1861 Reuter, Julius, Baron de. *Kensington-palace-gardens, W.*
- 1858 Reynardson, Henry Birch, Esq. *Adwell, near Tetworth, Oxfordshire.*
- 1872 1920Reynolds, Wm. Hy., Esq. *Care of Messrs. King & Co., 65, Cornhill, E.C.*
- 1867 Rhodes, Arthur John, Esq. 38, *Ordnance-road, St. John's-wood, N.W.*
- 1870 Rice, Joseph Marcus, Esq., M.D. 17, *Pleasant-street, Worcester City, Mass., U.S.* *Care of Messrs. Haseltine, Lake, and Co., 8, Southampton-buildings, W.C.*
- 1870 Rice, Wm., Esq. 2, *Albert-villas, Evelyn-road, Richmond, S.W.*; and *Stanford's Geograph. Establishment, Charing-cross, S.W.*
- 1868 Richards, Alfred, Esq. *Trechesbury-lodge, Forest-hill.*
- 1857 Richards, Admiral George H., F.R.S., C.B. *Admiralty, Whitehall, S.W.*; and 12, *Westbourne-terrace-road, W.*
- 1860 Richards, Rev. George, D.D. *Pelham-vicarage, Huntingford.*
- 1864 Richardson, F., Esq. *Juniper-hall, Mickleham, Dorking.*
- 1873 Richardson, W. Brown, Esq. *Darkston-rectory, Wednesbury, Staffordshire.*

Year of Election.	
1859	Rickards, Edward Henry, Esq. 4, Connaught-place, Hyde-park, W.
1865	1930•Rideout, W. J., Esq. 51, Charles-street, Berkeley-square, W.
1864	Ridley, F. H., Esq. 44, Alexandra-road, St. John's-wood, N.W.
1864	Ridley, George, Esq. 2, Charles-street, Berkeley-square, W.
1862	•Rigby, Major-General Christopher Palmer. Oriental Club, W.; and 14, Mansfield-street, W.
1868	Riley, Captain Charles Henry. Junior United Services Club, S.W.
1860	Rintoul, Robert, Esq. Windham Club, S.W.
1853	Ripon, Geo. Fredk. Sam., Marquis of, F.R.S. 1, Carlton-gardens, S.W.; and Studley Royal, Ripon.
1868	•Roberts, Charles W., Esq. Penwith-house, Effra-road, Brixton, S.W.
1861	Roberts, Capt. E. Wynne. Junior Carlton Club, S.W.; and 18, Great Cumberland-street, Hyde-park, W.
1865	Robertson, A. Stuart, Esq., M.D. Horwich, near Bolton.
1860	1940Robertson, D. Brooke, Esq., H.B.M.'s Consul. Canton. Care of Messrs. H. S. King and Co.
1861	•Robertson, Graham Moore, Esq. 21, Cleveland-square, Hyde-park, W.
1870	•Robertson, James Nisbet, Esq. 23, Porchester-square.
1868	Robertson, Rev. J. S. S., M.A., F.R.S. Duncrub-castle, Duncrub-park, Dunning, Perthshire, N.D.
1863	Robertson, R. B., Esq. H.M.'s Legation, Yokohama, Japan.
1870	Robinson, Alfred, Esq. Mountjoy-house, Huddersfield.
1830	•Robinson, Vice-Admiral Charles G. 84, Richmond-road, Westbourne-park, W.
1873	Robinson, Capt. F. C. B., R.N. Junior United Services Club, S.W.
1872	Robinson, Henry, Esq., M.L.C.E., F.R.S. 7, Westminster-chambers, S.W.
1864	Robinson, H. O., Esq. 6, South-street, Finsbury, E.C.
1859	1950Robinson, Sir Hercules G. R., K.C.M.G. Governor of New South Wales. Messrs. Burnett, 17, Surrey-street, W.C.
1871	Robinson, Rev. Henry Mowld, M.A. Chipcell, Essex.
1865	Robinson, J. R., Esq., LL.D., F.R.S. Scot., LL.D., F.R.S.A. du Nord, Copenhagen, F.R.S. Edin. Membre Société Asiatique de Paris, &c. South-terrace, Dewsbury.
1860	Robinson, Mr. Sergeant. 8, King's-Bench-walk, Temple, E.C.; and 43, Mecklenburgh-square, W.C.
1862	Robinson, Lieut.-Col. Sir John Stephen, Bart. Arthur's Club, S.W.; and 20, Park-lane, W.
1864	Robinson, John, Esq. Care of E. Street, Esq., 30, Cornhill, E.C.
1855	Robinson, Thomas F., Esq., F.L.S. 9, Derwent-road, South Penge-park, Anerley, S.E.
1850	•Robinson, Captain Walter F., R.N. 15, Montpellier-villas, Brighton.
1872	Robinson, Wm., Esq. Colonial-office, S.W.
1870	Robinson, Hon. W. C. F. (Governor of Prince Edward Island). Care of the Colonial-office.
1830	1960•Rodd, James Rennell, Esq. 29, Beaufort-gardens, S.W.
1860	Roe, Capt. Jno. Septimus, Surveyor-General, W. Australia. Care of Mrs. Ellis Jerroise, 7, Euston-place, Leamington.

Year of
Election.

- 1863 Rogers, John T., Esq. *Ricer-hill, Sevenoaks.*
- 1872 Rolleston, W. Vilett, Esq.
- 1861 Rollo, Lord. *Duncrieff-castle, Moffat, N.B.*
- 1863 Rönn, M. Hermann von. 21, *Kensington-park-gardens, W.*
- 1866 Rooke, Major W., R.A. *Formosa, Lynnington, Hants.*
- 1871 Rooks, Geo. Arthur, Esq. 24, *Lincoln's-inn-fields, W.C.*
- 1834 •Rose, The Right Hon. Sir George, F.R.S., LL.D. 4, *Hyde-park-gardens, W.*; and 25, *Southampton-buildings, Chancery-lane, W.C.*
- 1872 Rose, H. Cooper, Esq., M.D. *Hampstead, N.W.*
- 1868 1970 Rose, Henry, Esq. 8, *Porchester-square, Hyde-park, N.W.*
- 1861 Rose, Jas. Anderson, Esq. *Wandsworth, Surrey, S.W.*; and 11, *Salisbury-street, W.C.*
- 1857 •Rose, Colonel Sir Wm. Anderson, Alderman, F.R.S.L. *Carlton Club, S.W.*; 63, *Upper Thames-street, E.C.*; and *Upper Tooting, S.W.*
- 1870 Rose, The Right. Hon. Sir John. 18, *Queen's-jute, Hyde-park, W.*
- 1864 Ross, B. R., Esq. *Care of the Hudson-bay Company, Hudson-bay-house, 1, Lime-street, E.C.*
- 1870 Ross, Capt. Geo. Ernest Augustus (King's Own Light Inf. Militia). *Bryn-Ellen, Clapham-park, S.W.*
- 1867 Roositer, Wm., Esq., F.R.A.S. *South London Working Men's College, 91, Blackfriars-road, S.E.*
- 1868 Ross-Johnson, H. C., Esq. 7, *Albemarle-street, W.*
- 1864 •Roundell, C. S., Esq. 63, *Cromwell-road, South Kensington, S.W.*
- 1862 Roupell, Robert Priolo, Esq., M.A., Q.C. 15, *Albany, W.*
- 1839 1980 •Rous, Vice-Admiral the Hon. Henry John. 13, *Berkeley-square, W.*
- 1864 •Routh, E. J., Esq., M.A., F.R.S., F.R.A.S., &c. *St. Peter's College, Cambridge.*
- 1872 •Row, A. V. Nursing. Esq. *Daba-garden, Virajapatam, India. Care of King and Co., 65, Cornhill, E.C.*
- 1862 Rowe, Sir Joshua, C.B., late Chief Justice of Jamaica. 10, *Queen Anne-street, Curendish-square, W.*
- 1868 •Rowlands, Percy J., Esq. *India-office, S.W.*
- 1863 Rowley, Captain C., R.N. 33, *Cadogan-place, S.W.*
- 1856 Rucker, J. Anthony, Esq. *Blackheath, S.E.*
- 1861 •Rumbold, Charles James Augustus, Esq. *Downing College, Cambridge*; and 5, *Percival-terrace, Brighton.*
- 1861 Rumbold, Thomas Henry, Esq.
- 1860 Rumley, Major-General Randall, Vice-President Council of Military Education. 16, *Eaton-terrace, Eaton-square, S.W.*
- 1858 1990 •Russell, Lord Arthur John Edward, M.P. 10, *South Audley-street, W.*
- 1869 Russell, George, Esq., M.A. *Vierfield, Southfields, Wandsworth*; and 16, *Old Change, St. Paul's, E.C.*
- 1830 •Russell, Jesse Watts, Esq., D.C.L., F.R.S.
- 1830 Russell, John, Earl, F.R.S. 37, *Chesham-place, S.W.*; *Pembroke-lodge, Richmond, S.W.*; *Endsleigh-house, Devonshire*; and *Gart-house, near Callander, N.B.*

Year of
Election

- 1860 Russell, Wm. Howard, Esq., LL.D. *Carlton Club, S.W.*
- 1860 Rutherford, John, Esq. 2, *Cavendish-place, Cavendish-square, W.*
- 1857 *Ryder, Admiral Alfred P. *U.S. Club, S.W.; and Launde-abbey, Uppingham.*
- 1864 Ryder, G., Esq. 10, *King's-Bench-walk, Temple, E.C.*
- 1868 Sabben, J. T., Esq., M.D., *Northumberland-house, Stoke Newington, N.*
- 1852 Sabine, Lieut-General Sir Edw., K.C.H., R.A., Pres. R.S., F.R.A.S., &c. &c. 13, *Ashley-place, Victoria-street, Westminster, S.W.; and Woolwich, S.E.*
- 1869 2000 St. Clair, Alexander Dower, Esq., H.B.M. Consul, Jassy, Moldavia. *Care of Messrs. H. S. King and Co., Cornhill.*
- 1857 St. David's, Right Rev. Connoq Thirlwall, Bishop of. *Abergelly-palace, Carmarthen.*
- 1867 St. John, Lieut. Oliver Beauchamp Coventry, R.E. *National Club, S.W.*
- 1862 St. John, Spenser, Esq., British Legation Chargé d'Affaires, Port-au-Prince, Haiti. *Care of J. A. St. John, Esq., 44, St. John's-wood-ter., St. John's-wood, N.W.*
- 1863 Sale, Lieut. M. T., R.E.
- 1867 Salkeld, Colonel J. C. (H.M.I. Forces). 29, *St. James's-street, S.W.*
- 1868 Salles, J. de, Esq. 56, *Stanhope-gardens, South Kensington, W.*
- 1873 Salmon, Charles Spencer, Esq. 35, *Weymouth-street, W.*
- 1869 *Salmond, Robert, Esq. *Reform Club, S.W.; 14, Woodside-crescent, Glasgow; and Rankinston, Patna, Ayr.*
- 1845 *Salomons, Alderman Sir David, Bart., M.P., F.R.S., F.R.A.S. 26, *Great Cumberland-place, Hyde-park, W.; and Broom-hill, near Tunbridge-wells.*
- 1863 2010 *Salt, Henry, Esq. *Egremont, Bournemouth.*
- 1861 Salting, William Severin, Esq. 6, *Grosvenor-gardens, S.W.*
- 1861 *Sandbach, Wm. Robertson, Esq. 10, *Prince's-gate, Hyde-park, S.W.*
- 1867 Sandeman, David George, Esq., *Cambridge-house, Piccadilly, W.*
- 1872 Sandhurst, General Lord, G.C.B., G.C.S.I. *Royal-hospital, Kilmainham, Dublin.*
- 1862 Sanford, Major Henry Ayshford. 29, *Chester-street, Grosvenor-place, S.W.; and Nynehead-court, Wellington, Somerset.*
- 1870 Sanford, W. Ayshford, Esq., F.R.S. 66, *Pall-mall; and Nynehead-court, Wellington, Somerset.*
- 1866 Sarel, Lieut-Colonel H. A., 17th Lancers. *Army and Navy Club, S.W.; and Shanghai.*
- 1869 Sarll, John, Esq. *Beauvoir-house, 34, Englefield-road, N.*
- 1860 Sartoris, Alfred, Esq. *Abbotswood, Stone-on-the-Wold.*
- 1852 2020 Sanmarez, Captain Thomas, R.N. *The Firs, Jersey.*
- 1866 Saunders, James Ebenezer, Esq., F.L.S., F.G.S., F.R.A.S. 9, *Finsbury-circus; and Granville-park, Blackheath, S.E.*
- 1864 Saurin, Admiral E. *Prince's-gate, S.W.*
- 1863 Sawyer, Col. Charles, 6th Dragoon Guards. 50, *Sussex-sq., Kemp-town, Brighton.*
- 1871 Schalch, Ernest A. C., Esq. *Care of Miss Clendinning, 20, Milton-street, Dorset-square, N.W.; and 11, King's-Bench-walk, E.C.*
- 1861 Schenley, Edward W. H., Esq. 14, *Prince's-gate, S.W.*

Year of
Election.

- 1870 Scobell, Sandford Geo. T., Esq.
- 1872 Scott, Abraham, Esq. 5, *Longford-place, St. John's-wood, N.W.*
- 1886 Scott, Adam, Esq. 8, *Warwick-road-west, Maitland-cale, W.*
- 1868 Scott, Arthur, Esq. *Rotherfield-park, Alton, Hants; Travellers' Club, S.W.*
- 1859 2030 Scott, Lord Henry. 3, *Tilney-street, Park-lane, W.*
- 1881 *Scott, Hercules, Esq. *Brotherton, near Montrose, N.E.*
- 1868 Scott, William Cumin, Esq. *Mayfield-house, Blackheath-park, S.E.*
- 1863 Scovell, George, Esq. 34, *Grosvenor-place, S.W.*
- 1873 Searight, Hugh Ford, Esq. 2, *Devonshire-villas, Surbiton.*
- 1861 Searight, James, Esq. 80, *Lancaster-gate, W.*
- 1867 Seaton, Colonel the Right Hon. Lord. D3, *Albany, W.*
- 1869 Sedgwick, Jas. Bell, Esq. 1, *St. Andrew's-place, Regent's-park, N.W.*
- 1865 Sercombe, Edwin, Esq. 49, *Brook-street, Grosvenor-square, W.*
- 1858 *Serocold, Charles P., Esq. *Brewery, Liquorpond-street, E.C.*
- 1853 2040 Sevin, Charles, Esq. 155, *Fenchurch-street, E.C.*
- 1870 Sewell, Edward, Esq., M.A. *Itley, Yorkshire.*
- 1872 Sewell, Stephen A., Esq. *Reigate, Surrey.*
- 1867 Seymour, Alfred, Esq., M.P. 47, *Eaton-square, S.W.*
- 1872 *Seymour, Admiral F. Beauchamp, C.B. *Admiralty, Whitehall, S.W.*
- 1858 Seymour, George, Esq. 54, *Lime-street, E.C.*
- 1853 *Seymour, Henry Danby, Esq. *Athenæum Club, S.W.; Knoyle-house, Hindon, Wilts.*
- 1854 *Shadwell, Admiral Charles F. A., C.B., F.R.S. *Meadow-bank, Melksham, Wilts.*
- 1860 *Shadwell, Lieut.-Colonel Lawrence.
- 1856 *Share, Staff Commander James Masters, R.N. *The Willows, Wyke Regis, Weymouth, Dorset.*
- 1873 2050 Sharp, Colin Kimber, Esq. *The Terrace, Clopham-common, Surrey.*
- 1866 Sharp, Henry T., Esq. 102, *Piccadilly, W.*
- 1881 *Sharpe, William John, Esq. 1, *Victoria-street, Westminster, S.W.; and Norwood, Surrey, S.E.*
- 1869 Shaw, James V., Esq. *The Elms, Twickenham, S.W.*
- 1862 *Shaw, John, Esq. *Wingand, Otago, New Zealand. Care of John Morrison, Esq., New Zealand Government Agency, 7, Westminster-chambers, Victoria-st., S.W.*
- 1861 Shaw, John Ralph, Esq. *Arrows-park, Birkenhead.*
- 1870 *Shaw, Robert R., Esq. (British Joint Commissioner) *Ladakh, Punjab, East Indies. Care of R. P. Hicks, Esq., High-house, Kenton, near Exeter.*
- 1870 *Shearme, Edward, Esq. *Junior Athenæum Club, W.*
- 1846 Sheffield, George A. F. C., Earl of, F.R.S. 20, *Portland-place, W.; and Sheffield-park, Sussex.*
- 1868 *Shelley, Captain G. Ernest. 32, *Chesham-place, W.*
- 1867 2060 Shenstone, Fredk. Smith, Esq. *Sutton-hall, Barcombe, Lewes.*
- 1861 Shephard, Chas. Douglas, Esq., Surgeon R.N. *Plantation-house, near Cheadle, Staffordshire.*
- 1867 Shepherd, Chas. Wm., Esq., M.A., F.R.S. *Trotterscliffe, Maidstone.*

Year of
Election.

- 1860 Sheridan, H. Brinsley, Esq. *New City Club, E.C.*
- 1863 Sheridan, Richard B., Esq., M.P. 48, *Grosvenor-place, W.*
- 1857 Sherrin, Joseph Samuel, Esq., LL.D., PH.D. *Leyton-house, Leyton-crescent, Kentish-town, N.W.*
- 1859 *Sherwill, Lieut.-Col. W. S., F.G.S. *Perth, N.B.*
- 1858 *Shipley, Conway M., Esq. *Twyford Moors, Winchester; and Army and Navy Club, S.W.*
- 1868 Shirley, Lionel H., Esq., C.F., &c. *Windham Club, S.W.; and 9, Queen's-gate-terrace, S.W.*
- 1871 *Shoolbred, James, Esq. 38, *Lancaster-gate, Hyde-park, W.*
- 1873 2070 Short, Robert, Esq., 42, *Hillmitten-road, Cunden-road, N.*
- 1872 *Shuter, William, Esq. 66, *Bolsize-park-gardens, Haverstock-hill, N.W.*
- 1856 Shottleworth, Sir J. P. Kay, Bart. 3, *Victoria-street, S.W.; and Ganthorp-hall, Burnley, Lancashire.*
- 1869 Silk, George Chas., Esq. *The Vicarage, Kensington, W.*
- 1871 *Sills, Wm. Bernard, Esq. 19, *Bamford-gardens, S.W.*
- 1870 Silva, Emanuel, Esq. 8, *Sheen Villas, Park-road, Richmond, S.W.*
- 1865 *Silva, Frederic, Esq. 12, *Cleveland-square, Raywater, W.*
- 1859 Silver, the Rev. Fred., M.A., F.R.A.S. *Norton-rectory, Market Drayton, Salop.*
- 1859 *Silver, Stephen Wm., Esq. 66, *Cornhill, E.C.; and Norwood-lodge, Lower Norwood, S.E.*
- 1860 Sim, John Coygame, Esq. *Coombe-wood, Kingston, Surrey.*
- 1853 2080 Simmons, Edward R., Esq., Barrister-at-Law. *Nevill-house, Belgrave-terrace, Brighton.*
- 1848 *Simmons, Lieut.-General Sir John L. A., R.E., K.C.B. *Lieut.-Governor Royal Military Academy, Woolwich, S.E.*
- 1868 Simons, Henry M., Esq. *Tyernall-crescent, Wood-road, Sydenham-hill, S.E.*
- 1864 Simpson, Frank, Esq. 17, *Whitehall-place, S.W.*
- 1862 Simpson, Henry Bridgeman, Esq. 44, *Upper Grosvenor-street, W.*
- 1863 *Simpson, William, Esq. 64, *Lincoln's-inn-fields, W.C.*
- 1866 *Sims, Richard Proctor, Esq., C.E. *Malabar-hill, Bombay. Care of Messrs. H. S. King and Co.*
- 1858 Skelmersdale, Edward, Lord. *Lathom-park, Ormskirk, Lancashire.*
- 1872 Skillbeck, A. Jos., Esq. 202, *Upper Thames-street, E.C.*
- 1866 Skinner, John E. H., Esq. 3, *Dr. Johnson's-buildings, Temple, E.C.*
- 1863 2090 Skrine, Henry D., Esq. *Warleigh-manor, near Bath.*
- 1871 Slade, Henry, Esq., Staff-Surgeon, R.N. *Army and Navy Club, S.W., and Royal Western Yacht Club, Plymouth.*
- 1870 Sladen, Major E. B. (Polit. Agent at the Court of H.M. the King of Burmah). *Care of Messrs. Grindlay and Co., 55, Parliament-street, S.W.*
- 1861 Sladen, Rev. Edward Henry Mainwaring. *The Gore, Bournemouth.*
- 1861 Sligo, G. J. Browne, Marquis of. 14, *Munsfield-street, W.; and Westport, County Mayo.*
- 1872 Smale, John, Esq. Chief Justice, Hong-Kong. *Care of Clements Smale, Esq., 46, York-terrace, Regent's-park, N.W.*

Year of
Election.

- 1865 Smedley, Joseph Y., Esq., M.A. *Oxford and Cambridge Club, S.W.*
- 1871 Smetham, John Osborne, Esq. *King's Lynn, Norfolk.*
- 1860 *Smith, Augustus Henry, Esq. *Flexford-house, Guildford.*
- 1871 Smith, Major C. B. Esq. 14, *St. James's-square, S.W. Care of King and Co., Cornhill, E.C.*
- 1857 2100* Smith-Bosanquet, Horace, Esq. *Broxbourne-bury, Hoddesdon.*
- 1866 Smith, Drummond Spencer, Esq. 7, *Mount-street, Berkeley-square, W.*
- 1859 Smith, Edward, Esq. *Windham Club, S.W.*
- 1865 Smith, Guildford, Esq. 63, *Charing-cross, S.W.*
- 1871 Smith, Geo. Fereday, Esq., M.A., J.P., &c. *Grovehurst, Tunbridge-wells.*
- 1873 Smith, Griffiths, Esq. *The Grove, Highgate, N.*
- 1861 Smith, Jervoise, Esq. 47, *Belgrave-square, S.W.*
- 1853 Smith, John Henry, Esq. 1, *Lombard-st., E.C.; and Purley, Croydon, Surrey.*
- 1861 *Smith, Joseph Travers, Esq. 25, *Throgmorton-street, E.C.*
- 1868 *Smith, Major Robert M., R.E., Director of the Telegraphic Establishment in Persia. *Telerman.*
- 1857 2110 Smith, Captain Philip, Grenadier Guards.
- 1841 *Smith, Thomas, Esq.
- 1859 *Smith, W. Castle, Esq. 1, *Gloucester-terrace, Regent's-park, N.W.*
- 1857 Smith, Wm. Gregory, Esq. *Hudson-bay Company, 1, Lime-street, E.C.*
- 1859 Smith, William Henry, Esq., M.P. 1, *Hyde-park-street, W.*
- 1869 Smyth, Colonel Edmund. *Welton-le-Wold, South Lincolnshire.*
- 1869 *Smyth, Warrington, Esq., F.R.S. 92, *Interness-terrace, W.*
- 1837 *Smyth, Rear-Admiral William. *Care of Messrs. Child and Co., Temple-bar.*
- 1850 *Smythe, Colonel William J., R.A., F.R.S.
- 1872 Snooke, William, Esq. 20, *Northampton-park, Canonbury, N.*
- 1865 2120* Solomons, Hon. George. *Jamaica.*
- 1839 *Somers, Charles, Earl. 33, *Prince's-gate, S.W.; Eastnor-castle, Herefordshire; and The Priory, Reigate, Surrey.*
- 1862 Somerset, Capt. Leveson E. H., R.N. *Care of Messrs. Chard, 3, Clifford's-inn, Fleet-street, E.C.*
- 1855 Sopwith, Thos., Esq., M.A., C.E., F.R.S. 103, *Victoria-street, Westminster, S.W.*
- 1860 *Southey, James Lowther, Esq. *Care of Messrs. Stilwell, Arundell-street, Strand.*
- 1860 Southesk, The Right Hon. James Carnegie, Earl of. 73, *Portland-place, W.*
- 1869 Southwell, Thomas Arthur Joseph, Viscount. *Windham Club, S.W.*
- 1872 Spalding, Captain H., 104th Regiment. *Naval and Military Club, Piccadilly.*
- 1865 Spalding, Samuel, Esq. 7, *Upper Park-road, South Hampstead, N.W.*
- 1870 Sparks, J. Hyde, Esq. *Conservative Club, S.W.*
- 1873 2130 Spence, Jas. Mudie, Esq. *Erlington-house, Whalley-range, Manchester.*
- 1870 Spencer, Admiral the Hon. J. W. S. 5, *Portman-street, W.*
- 1867 Spicer, Edward, Esq. 19, *New Bridge-street, E.C.*
- 1863 Spiekermell, Dr. Geo. E., Principal of Eastman's Royal Naval Establishment. *Eastern-parade, Southsea.*
- 1855 *Spottiswoode, William, Esq., F.R.S. 50, *Grosvenor-place, S.W.*

Year of Election.	
1859	*Spratt, Rear-Admiral Thos. A. B., C.B., F.R.S. <i>Clare-lodge, Needill-park, Tunbridge-wells, Kent.</i>
1866	Spruce, Richard, Esq., PH.D.R. <i>Welburn, Castle Howard, York.</i>
1871	Square, William, Esq., F.R.C.S. 22, <i>Portland-square, Plymouth.</i>
1859	Stafford, Edward W., Esq. Colonial Secretary of New Zealand. <i>Care of Mr. J. S. Tytler, 19, Castle-street, Edinburgh.</i>
1853	Stanford, Edward, Esq. 6, <i>Charing-cross, S.W.</i>
1855	2140 Stanhope, Philip Henry, Earl, Pres. Soc. of Antiquaries, F.R.S. 3, <i>Grosvenor-place-houses, Grosvenor-place, S.W.; and Chevening, Sevenoaks, Kent.</i>
1860	*Stanhope, Walter Spencer, Esq. <i>Cannon-hall, Barnsley, Yorkshire.</i>
1856	Stanley, Edmund Hill, Esq. <i>Leicester-house, Gipsy-hill, Norwood, S.E.</i>
1870	Stanley, Lieut. Henry, R.N. <i>Admiralty Survey, Melbourne. Care of Captain J. E. Davis, R.N.</i>
1872	*Stanley Walsley, Esq., C.E. <i>Care of Messrs. Cutbill, Son, and Delungo, 103, Cannon-street, E.C.</i>
1869	Stanton, Charles Holbrow, Esq. 1, <i>Mitre-court-buildings, Inner Temple, E.C.</i>
1863	Stanton, George, Esq. <i>Coton-hill, Shrewsbury; and Conservative Club, S.W.</i>
1867	Stanton, Henry, Esq. 1, <i>River-street, Myddleton-square, W.C.</i>
1871	Stark, Wm. Emery, Esq. <i>Chancellor-villa, Park-road, West Dulwich, S.E.</i>
1870	Starling, Joseph, Esq. <i>Bonesford-lodge, Dyke-road, Brighton.</i>
1856	2150 Statham, John Lee, Esq. 60, <i>Wimpole-street, W.</i>
1863	*Staveley, Miles, Esq. <i>Old Steningsford-hall, Ripon.</i>
1868	Staveley, Major-Gen. Sir Charles, K.C.B. <i>Government-house, Devonport; and United Service Club, S.W.</i>
1869	Stebbing, Edward Charles, Esq. <i>National Debt Office, 19, Old Jewry, E.C. and The Aspen, Sunbury.</i>
1867	Steel, Capt. J. P., R.E. <i>Junior United Service Club, S.W. Care of Messrs. Grindlay and Co., 55, Parliament-street, S.W.</i>
1868	Steel, William Strang, Esq. <i>Care of Messrs. Houston, Steel, and Co., 3, East India-avenue, E.C.</i>
1871	Stein, Hon. Robert. <i>Port Louis, Mauritius. Care of Robt. McKerrell, Esq., 45, Inverness-terrace, W.</i>
1870	Stenning, Charles, Esq. 3, <i>Upper Hamilton-terrace, N.W.</i>
1872	Stephani, Albert, Esq. (Kt. of Baderkasa), LL.D., PH.D., Secretary to Chamber of Commerce and Industry for Silesia. <i>Troppau, Silesia. Care of the Austro-Hungarian Consulate, 29, St. Swithin's-lane, E.C.</i>
1830	*Stephen, Sir George. <i>Melbourne. Care of Mr. H. W. Ravenscroft, 7, Gray's-inn-square, W.C.</i>
1870	2160 Stephens, Thomas Wall, Esq. <i>North-villa, Regent's-park, N.W.</i>
1869	Stephenson, B. Charles, Esq. 13, <i>Bolton-row, Mayfair, W.</i>
1857	Stephenson, Sir R. Macdonald, C.E. 72, <i>Lancaster-gate, W.; and East-cottage, Worthing.</i>
1868	Stephenson, Henry P., Esq. 8, <i>St. Mary-axe, E.C.</i>
1866	Stepney, A. K. Cowell, Esq. 6, <i>St. George's-place, Knightsbridge, S.W.</i>
1869	Stewart, Colonel T. R., Bombay Army. <i>Esqair, Machynlleth, Wales.</i>

Year of Election.	
1855	Stevens, Henry, Esq., F.S.A. 4, <i>Trafalgar-square, W.C.</i>
1841	Stevenson, Thomas, Esq., F.S.A. 37, <i>Upper Grosvenor-street, W.</i>
1869	Stewart, Capt. C. E., I.A. (Bengal Staff Corps). 14, <i>Sussex-gdns., Hyde-park, W.</i>
1873	Stewart, Admiral Wm. Houston, C.B. 53, <i>Warwick-square, S.W., and Admiralty, S.W.</i>
1871	1170* Stewart, Captain Herbert, 37th Regiment. <i>Care of Rev. E. Stewart, Sparshot, near Winchester.</i>
1866	Stewart, Rev. Dr. James. <i>Lovedale, Alice, South Africa. Care of Robert Young, Esq., Offices of the Free Church of Scotland, Edinburgh.</i>
1860	*Stewart, Major J. H. M. Shaw, Royal Madras Engineers.
1869	Stewart, J. L., Esq., M.D., Forest Department, India. <i>Care of Mr. Nutt, Strand.</i>
1872	Stewart, Wm., Esq., M.D. <i>Paraguay; and Galashiels, N.B.</i>
1870	Stillwell, Henry, Esq., M.D. <i>Moarcroft, Hillington, Uxbridge.</i>
1860	Stirling, Capt. Frederick H., R.N. <i>H.M.S. 'Hero,' and United Service Club, S.W.</i>
1863	Stirling, Sir Walter, Bart. 36, <i>Portman-square, W.</i>
1868	Stock, Thomas Osborne, Esq., M.P. 44, <i>Eastbourne-terrace, W.</i>
1860	Stockcr, John Palmer, Esq. 93, <i>Oxford-terrace, Hyde-park, W.</i>
1845	1180* Stokes, Rear-Admiral John Lort. <i>United Service Club, S.W.; and Scotchwell, Haverfordwest, Wales.</i>
1868	Stone, David H., Esq., Alderman. <i>Sydenham-hill, S.E.</i>
1867	*Story, Edwin, Esq., M.A.
1870	Stoton, William O., Esq. <i>Junior Carlton Club, S.W.</i>
1868	Storin, Rev. Charles F. 8, <i>Grosvenor-mansions, Victoria-street, S.W.</i>
1866	Strachey, Major-General Richard, R.E., C.B.L., F.R.S. <i>India-office, S.W.</i>
1861	Strange, Lieut.-Col. Alexander, F.R.S. <i>India Store Department, Belvedere-road, Lambeth, S.E.</i>
1858	Stratford de Redcliffe, Stratford Canning, Viscount. 29, <i>Grosvenor-square, W.</i>
1864	Straton, Rev. N. D. J. <i>Kirkby-wharf, Tadcaster.</i>
1860	Strickland, Edward, Esq., C.B., Commissary-General. <i>Halifax, Nova Scotia.</i>
1868	1190* Strode, Alf. Rowland Chetham, Esq. <i>Dunedin, Otago, New Zealand. Care of J. G. Cooke, Esq.</i>
1865	Strong, F. K., Esq., R.N. <i>Hamburg, Germany. Care of Alfred Strong, Esq., Junior Athenæum Club, Piccadilly, W.</i>
1853	Strousberg, Dr. Bethel Henry. 70, <i>Wilhelm-strasse, Berlin. Care of Messrs. Asher and Co., Bedford-street, Covent-garden, W.C.</i>
1853	Strutt, George H., Esq., F.R.A.S. <i>Bridge-hill, Belper.</i>
1858	Strutt, Captain Hammel Ingold, F.R.A.S. <i>Royal Mail Steam Packet Company, Southampton.</i>
1853	*Strzelecki, Count P. E. de, C.B., F.R.S. 23, <i>Savile-row, W.</i>
1859	Stuart, Lieut.-Col. J. F. D. Crichton. 25, <i>Wilton-crescent, Belgrave-sq., S.W.</i>
1873	Stuart, Lieut.-Gen. Charles. 5, <i>Granville-place, Portman-square, W.</i>
1861	Stuart, Right Hon. Sir John. <i>Lock Carron, Ross-shire; and 5, Queen's-gate, Hyde-park, W.</i>
1866	Stuart, Major Robert. <i>Janiaa, Albania.</i>
1872	1200c Sturt, Henry, Esq., Jun. 27, <i>Gordon-square, W.C.</i>

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- 1872 Styau, Arthur, Esq., F.S.A. 28, *Norfolk-crescent, Hyde-park, W.*
- 1858 Sudeley, Charles G. Hanbury Tracy, Lord. 5, *Bolton-rose, W.; and Toddington, near Broadway, Worcester.*
- 1857 Sullivan, Rear-Admiral Sir Bartholomew J., R.N., K.C.B.
- 1865 Sullivan, Captain T. W., C.B., R.N. *Kimpton, Welwyn, Herts.*
- 1869 Summerhayes, William, Esq., M.D. *Upper St. Giles's, Norwich.*
- 1862 Surridge, Rev. Henry Arthur Dillon, M.A. 21, *Berners-street, W.*
- 1862 Surtees, Colonel Charles Freville. *Chalcott-house, Long Ditton, Surrey.*
- 1861 *Sutherland, George Granville William, Duke of, F.R.S. *Stafford-house, St. James's-palace, S.W.*
- 1869 Sutherland, Robert, Esq. *Egham-rise, Surrey.*
- 1869 2210 Sutherland, Thomas, Esq.
- 1871 Sutton, W. P., Esq., LL.D., F.S.A., &c. 42, *High-street, Ilfracombe, North Devon.*
- 1871 Swan, Major Percival. 114, *Piccadilly, W.*
- 1857 Swanzy, Andrew, Esq. *Sevenoaks, Kent.*
- 1836 *Swinburne, Rear-Admiral Charles H. *Holmewood, Henley-on-Thames.*
- 1862 *Swinburne, Commr. Sir John, Bart., R.N. 9, *Queen-square, Westminster, S.W.; and Capheaton, Newcastle-on-Tyne.*
- 1863 Swinhoe, R., Esq., H.B.M. Consul, Taiwan. *Care of Mr. Charles Arkell, 14, Trinity-square, Tower-hill, E.C.*
- 1871 Syme, Henry, Esq. 60, *Palace-gardens-terrace, Campden-hill, W.*
- 1864 Synnods, F., Esq., M.D. *Beaumont-street, Oxford.*
- 1832 *Synge, Colonel Millington H., R.E. *Alvercliff, Alverstoke, Hants.*
- 1852 2220 Tagart, Courtenay, Esq. *Rocklease Point, Durdham Down, near Bristol.*
- 1859 Tagart, Francis, Esq. 31, *Craven-hill-gardens, Hyde-park, W.*
- 1866 Talbot, Edward C., Esq. (Imperial Chinese Customs). *China. Care of H. C. Batchelor, Esq., 2, King William-street, E.C.*
- 1864 Tait, P. M., Esq. *Oriental Club, W.*
- 1857 *Tait, Robert, Esq. 14, *Queen Anne-street, W.*
- 1867 Talbot, Right Hon. Richard Gilbert. *Ballinacra, Kingstown, County Dublin.*
- 1861 Talbot de Malahide, James Talbot, Lord, F.R.S. *Malahide Castle, Co. Dublin.*
- 1861 Taylor, Commander A. Dundas, R.N. 6, *Lawn-terrace, Blackheath, S.E.*
- 1869 Taylor, George N., Esq. *National Bank, Old Broad-street, E.C.*
- 1865 Taylor, H. L., Esq. *Reform Club, S.W.; and 23, Phillimore-gardens, Kensington, W.*
- 1865 2230 Taylor, Rev. Jas. Hudson. 6, *Pyrland-road, Newington-green, N.*
- 1873 Taylor, Jas. Banks, Esq. *Thatched-house Club, St. James's, S.W.*
- 1863 Taylor, John, Esq. *Grena-lodge, Richmond.*
- 1870 *Taylor, John Fenton, Esq. 20, *New-street, Spring-gardens, S.W.*
- 1867 *Taylor, John George, Esq. H.B.M. Consul in Kurdistan, Diarbekir. *Care of Messrs. O'Brien and Co., 43, Parliament-street, S.W.*
- 1854 *Taylor, John Stopford, Esq., M.D. 1, *Springfield, St. Anne-street, Liverpool.*
- 1871 *Taylor, John, Esq. *The Rocks, Bath; and Booth-hall, Blackley, Lancashire.*

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- 1863 Taylor, Major-Gen. R. C. H., C.B. 16, *Eaton-place, S.W.*; and *Carlton Club, S.W.*
- 1864 Taylor, Wm. Richard, Esq., Deputy-Commissary.
- 1873 Teede, Chas., Esq. 30, *Canonbury-park-south, N.*
- 1863 2240 Tegg, William, Esq. 13, *Doughty-street, Mecklenburgh-square, W.C.*
- 1865 Temple, Sir Richard, K.C.S.I.
- 1860 Templeton, John, Esq. 24, *Budge-row, E.C.*
- 1857 Tennant, Professor James. 149, *Strand, W.C.*
- 1872 Terrero, Maximo, Esq. (Consul-General for Republic of Paraguay.) 88, *Belize-park-gardens, N.W.*
- 1870 Teschemacher, Edward Fred., Esq. 1, *Highbury-park-north, N.*
- 1830 *Thatcher, Colonel E.I.C.
- 1863 Thomas, G., Esq.
- 1854 Thomas, Henry Harrington, Esq. 8, *Cumden-crescent, Bath.*
- 1872 Thomas, J. R., Esq., Staff Assist. Surg. *Castle-hill, Fishguard, Pembrokeshire.*
- 1864 2250 Thomas, James Lewis, Esq., War-office, Horse Guards. 23, *Gloucester-street, Warwick-square, S.W.*; and *Thatched House Club, St. James's-street, S.W.*
- 1865 Thomas, John Henwood, Esq. *East India Dept., Custom-house, E.C.*
- 1872 Thomas, Wm. Nicholas, Esq., R.N. *Care of Thos. N. Thomas, Esq., 8, Alexandra-place, Mutley, Plymouth.*
- 1869 Thompson, Lieut.-Col. George, C.E., Cordoba, Argentine Confederation. *Care of Messrs. Parlanc, Graham, and Co., Buenos Ayres; Messrs. Lumb, Wanklyn, and Co., 10, Angel-court, Throgmorton-street, E.C.*
- 1869 *Thompson, Henry Yates, Esq. *Vice-regal Lodge, Dublin; 2, Cleveland-row, St. James's, S.W.*; and *Thingwall-park, near Liverpool.*
- 1872 Thompson, Lieut. Richard, R.E. *Brompton-barracks, Chatham.*
- 1863 Thomson, James, Esq. *Dunstable-house, Richmond.*
- 1863 Thomson, James Duncan, Esq., Portuguese Consul. *St. Peter's-chambers, Cornhill, E.C.*
- 1848 *Thomson, J. Turnbull, Esq., Chief Surveyor. *Otago, New Zealand.*
- 1866 Thomson, John, Esq. 10, *Osborne-terrace, Clapham-road, S.W.*
- 1861 2260 *Thomson, Ronald Ferguson, Esq., 1st Attaché to the Persian Mission.
- 1854 *Thomson, Thomas, Esq., M.D., F.R.S. *Hope-house, New, W.*
- 1865 Thomson, W. T., Esq.
- 1862 *Thorne, Augustus, Esq. 4, *Cullum-street, City, E.C.*
- 1867 Thornton, Edward, Esq., C.B. *Hurrow.*
- 1847 Thornton, Rev. Thomas Cooke, M.A., M.R.I. *Brock-hall, near Weedon, Northamptonshire.*
- 1858 Thorold, Rev. A. W. 31, *Gordon-square, W.C.*
- 1863 Thorold, Alexander W. T. Grant, Esq. *Madsley, Great Grimsby, Lincolnshire.*
- 1871 Thorpe, Wm. Geo., Esq., F.R.S. *Gloucester-house, Larkhall-rise, S.W.*; and *Barton's-house, Ipplepen, Newton Abbot, Devon.*
- 1861 Thrupp, John, Esq.
- 1839 2270 Thunllier, Lieut.-Colonel H. L., Surveyor-General of India, F.R.S. *Calcutta. Care of Messrs. Grindlay and Co., 55, Parliament-street.*

Year of Election.	
1872	Thuillier, Capt. Hy. R., R.E. <i>King and Co., Pall-mall.</i>
1865	*Thurburn, C. A., Esq. 16, <i>Kensington-park-gardens, Notting-hill, W.</i>
1864	*Thurburn, Hugh, Esq. 103, <i>Westbourne-terrace, W.</i>
1861	Thurlow, The Hon. Thos. J. Howell. <i>Dumphail, Torres, N.B.</i>
1868	Tilley, Henry Arthur, Esq. <i>Hanwell, Middlesex, W.</i>
1872	Tinline, George, Esq. 17, <i>Prince's-square, Dayswater, W.</i>
1839	*Tinne, John A., Esq. <i>Briarley, Aigburth, near Liverpool.</i>
1873	Tipping, George D., Esq. <i>Coombe-lodge, Kingston-hill, Surrey.</i>
1862	Tockl, John, Esq. <i>Eustote-lodge, St. John's-park, Blackheath, S.E.</i>
1865	2180 Todd, Rev. John W. <i>Tudor-hill, Forest-hill, Sydney, N.S.</i>
1853	*Tomlin, George Taddy, Esq., F.S.A. <i>Combe-house, Bartonfelds, Canterbury.</i>
1853	Tomline, George, Esq. 1, <i>Carlton-house-terrace, S.W.</i>
1856	Torrance, John, Esq. 5, <i>Chester-place, Hyde-park-square, W.</i>
1866	Torrans, Sir Robert Richard, K.C.M.G., M.P. 2, <i>Gloucester-place, Hyde-park, W.; and The Cott, Holm, near Ashburton, South Devon.</i>
1859	Townshend, Commander John, R.N. <i>Lona, Weston-super-Mare.</i>
1866	Townson, Wm. Parker, Esq., B.A. Cantab. <i>Care of Miss Townson, Ash-house, Coton, near Lancaster.</i>
1846	*Towry, George Edward, Esq.
1858	Towson, J. Thomas, Esq. <i>Secretary Local Marine Board, Liverpool.</i>
1864	*Toynbee, Capt. Henry. 25, <i>Ince-ness-road, Kensington-gardens, W.</i>
1863	2290 Tozer, Rev. H. F., M.A. <i>Exeter College, Oxford.</i>
1864	Tracy, The Hon. C. H. 11, <i>George's-street, W.</i>
1863	*Travers, Arch., Esq. <i>Addison-road (opposite the Napier-road), Kensington, W.</i>
1867	Tremenheere, Major-General C.W., C.B., R.E. <i>Shakespeare-house, Chatham-place, Brighton.</i>
1859	Tremlett, Rev. Francis W., M.A., D.C.L., DR. PH. <i>Belsize-park, Hampstead, N.W.</i>
1869	Trench, Captain Frederic. <i>Naval and Military Club, Piccadilly, W.</i>
1865	*Trench, Major the Hon. Le Poer, R.E. 32, <i>Hyde-park-gardens, W.; and Ordnance-survey-office, Pinlicko, S.W.</i>
1863	Trestrail, Rev. Frederick. <i>St. John's-road, Newport, Isle of Wight.</i>
1862	Trevelyan, Sir Charles Edward, K.C.B. 8, <i>Grosvenor-crescent, S.W.</i>
1830	Trevelyan, Sir Walter Calverly, Bart., M.A., F.S.A., F.L.S., F.R.S.N.A., &c. <i>Athenaeum Club, S.W.; Wallington, Northumberland; and Nettlecombe, Somerset.</i>
1864	2300 Trimmer, Edmund, Esq. <i>Care of Messrs. Trimmer and Co., New City-chambers, Bishopsgate-street, E.C.</i>
1867	Tritton, Joseph Herbert, Esq. 54, <i>Lombard-street, E.C.</i>
1871	Trivett, Captain John Fredk., R.N.R. <i>The Homestead, Hackney-common, N.E.</i>
1869	Trotter, Lieut. Henry, R.E. 11, <i>Hertford-street, Mayfair, W.</i>
1872	Trotter, Lieut. J. Moubray. <i>Naval and Military Club, Piccadilly, W.</i>
1872	Treuenfeld, Richard von F., Esq. 3, <i>Great George-street, Westminster.</i>
1870	Trutch, J. W., Esq. (Chief Commissioner of Lands and Works). <i>British Columbia.</i>
1867	Tryon, Captain George, R.N., C.B. <i>Army and Navy Club, S.W.</i>

Year of
Election.

- 1862 Tuckett, Francis Fox, Esq. *Frenchay, near Bristol.*
- 1835 •Tuckett, Frederick, Esq. 4, *Mortimer-street, Cavendish-square, W.*
- 1865 2310Tuckett, Philip D., Esq. 28, *Cleveland-gardens, Hyde-park, W.*
- 1852 Tudor, Edward Owen, Esq., F.R.A. 12, *Portland-place, W.*
- 1857 Tudor, Henry, Esq. 12, *Portland-place, W.*
- 1870 Tupper, Lieut.-Col. D. W. *Army and Navy Club, S.W.*
- 1864 Turnbull, George, Esq., C.E., F.R.A.S. 23, *Cornwall-gardens, South Kensington, W.*
- 1834 •Turnbull, Rev. Thomas Smith, F.R.S. *University Club, S.W.; and Blofield, Norfolk.*
- 1870 Turner, Major-General Henry Blois, Bomb. Eng. 131, *Harley-street, W.*
- 1863 Turner, Thomas, Esq. *Guy's-hospital, Southwark, S.E.*
- 1867 Tweedle, Captain Michael, R.A. *Woolwich.*
- 1864 •Twentyman, A. C., Esq. *Tettenhall-wood, near Wolverhampton.*
- 1863 2310Twentyman, William H., Esq. *Ravensthorpe, St. John's-wood-park, N.W.*
- 1863 •Twisleton, Hon. E. F. *Rutland-gate, S.W.*
- 1849 Twiss, Sir Travers, D.C.L., F.R.S.
- 1858 Twysford, Captain A. W., 21st Hussars. *Resident Commissioner, H. M.'s Contract Prisons, British Guiana. Care of A. J. Murray, Esq., 7, Whitehall-place, S.W.; and Reform Club, S.W.*
- 1865 Tyer, Edward, Esq., C.E., F.R.A.S. 15, *Old-jewry-chambers, E.C.*
- 1862 •Tyler, George, Esq. 24, *Holloway-place, Holloway-road, N.*
- 1859 Tytler, Captain W. Fraser. *Alderic, Inverness.*
- 1869 Underdown, E. M. Esq., 3, *King's-Bench-walk, Temple, E.C.*
- 1862 Underhill, Edward Bean, Esq., LL.D. *Derwent-lodge, Thurlow-road, Hampstead, N.W.*
- 1868 Unwin, Howard, Esq., C.E. 24, *Bucklersbury, E.C.*
- 1861 2330Uscher, John, Esq. *Arthur's Club, St. James's-street, S.W.*
- 1844 •Vacher, George, Esq. *Minor-house, Teddington.*
- 1872 •Vallentin, James R., Esq. 55, *Cow-cross, E.C.*
- 1862 •Vander Byl, P. G., Esq., M.P. 126, *Harley-street, W.*
- 1865 Vane, G., Esq. *Ceylon. Messrs. Price and Boustead, Craven-st., Strand, W.C.*
- 1856 •Vaughan, James, Esq., F.R.C.S. *Builth, Breconshire.*
- 1852 •Vavasour, Sir Henry M., Bart. 8, *Upper Grosvenor-street, W.*
- 1855 Vavasour, James, Esq. *Knockholt, near Sevenoaks, Kent.*
- 1868 Venner, Captain Francis John S. *Dilston-house, Upper Norwood, S.E.; and Etnbank, near Worcester.*
- 1871 Vereker, Lieut.-Col. the Hon. Chas. Smyth. *The Avenue, Beulah-hill, S.E.*

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Election.

- 1863 2340* Vereker, The Hon. H. P., LL.D., H.M. Consul at Charante. 1, Portman-square, W.
- 1862 Verner, Edward Wingfield, Esq., M.P. *The Aske, Bray, Ireland.*
- 1862 *Verney, Commr. Edmond H., R.N. 32, South-street, Grosvenor-square, W.
- 1837 *Verney, Major Sir Harry C., Bart., M.P., F.R.A.S. *Travellers' Club, S.W.; 38, Upper Grosvenor-street, W.*
- 1857 Verrey, Charles, Esq.
- 1852 Verulam, James Walter, Earl of. *Gorhambury, near St. Alban's; Barry-hill, Surrey; and Messing-hall, Essex.*
- 1865 Vile, Thomas, Esq. 75, Oxford-terrace, W.
- 1865 *Vincent, M. C., Esq., Professor of Economic Geology and Metallurgy; Inspector of Mines, &c. *Cincinnati, U.S.; and 127, Strand, London.*
- 1857 Vincent, John, Esq. 7, Granville-park, Blackheath, S.E.
- 1873 Vincent, Lieut. Charles Edward Howard. *Royal United Service Institution, Whitehall-yard, S.W.*
- 1871 2350Vine, Lieut. Wm. W., R.N. *Ismahoe-villa, Waterley-road, Southsea.*
- 1838 Vines, William Reynolds, Esq., F.R.A.S. *Care of Sydney H. Vines, Esq., Guy's-hospital, E.C.; and 4, Thavies-inn, Holborn-hill, E.C.*
- 1872 Vivian, Hon. H. Crespiigny. *Foreign-office, S.W.*
- 1863 *Vyvyan, Sir Richard Rawlinson, Bart., F.R.S. *Trelowarren, Cornwall.*
- 1852 Wade, Mitchell B., Esq. 68, South John-street, Liverpool.
- 1864 Wade, R. B., Esq. 13, Seymour-street, Portman-square, W.
- 1863 Wade, Thos. F., Esq., C.B., H.B.M. Secretary of Legation. *Pekin, China.*
- 1873 *Wagner, Henry, Esq., M.A. 16, King-street, St. James's, S.W.
- 1853 *Wagstaff, William Racster, Esq., M.D., M.A.
- 1869 Waite, Charles, Esq., LL.D., Principal of St. John's College. *Weighton-road, South Penge-park, S.E.*
- 1863 2360Waite, Henry, Esq. 3, Victoria-street, Pimlico, S.W.
- 1867 *Waite, Rev. John.
- 1871 Wakley, Thos. Finsbury Septimus, Esq., C.E.
- 1870 *Walker, Albert, Esq. *Auckland Club, New Zealand. Care of L. C. Walker, Esq., 3, Hartley-villas, Lansdowne-road, Croydon.*
- 1873 Walker, John, Esq. 15, Loughborough-road, North Brixton.
- 1862 Walker, Major-General C. P. Beauchamp, C.B. 97, Onslow-square, S.W.; and *United Service Club, S.W.*
- 1872 Walker, Capt. Campbell (Mad. Staff Corps). 17, Lansdowne-road, Notting-hill, W.; and *The Grange, Alnmouth, Northumberland.*
- 1861 Walker, Edward Henry, Esq., Consul at Cagliari. *Care of Messrs. Drummond.*
- 1863 *Walker, Frederick John, Esq. *The Priory, Bathwick, Bath.*
- 1859 *Walker, Colonel James T., F.R.S., Royal Engineers. Supt. Gt. Trig. Survey of India. *Dehra Doon, India. Care of Messrs. H. S. King and Co., Pall-mall, S.W.; and 17, Queensberry-place, Cornwall-road, South Kensington, S.W.*

Year of
Election.

- 1873 2370 Walker, John, Esq. 15, *Loughborough-road, North Brixton.*
- 1861 *Walker, John, Esq.
- 1859 *Walker, Captain John, H.M.'s 66th Foot. *Broom-hill, Colchester.*
- 1871 *Walker, Capt. J. B. *East Bank, Oston, Birkenhead; and Old Calabar, near Bonny, West Africa.*
- 1864 Walker, R. B. N., Esq. *Care of Mr. Blissett, 38, South Castle-street, Liverpool.*
- 1863 *Walker, T. F. W., Esq. 6, *Brock-street, Bath; and Athenæum Club, S.W.*
- 1861 Walker, Rev. William. *Grammar-school, Hanley-castle, Upton-on-Severn.*
- 1866 Walker, William, Esq., F.S.A. 48, *Hildrop-road, Tufnell-park, N.*
- 1868 Walkinshaw, William, Esq. 74, *Lancaster-gate, Hyde-park, W.*
- 1854 *Wallace, Alfred Russell, Esq. *The Dell, Grays, Essex.*
- 1861 2380 Wallace, Rev. Charles Hill, M.A. 3, *Harley-place, Clifton, Bristol.*
- 1872 Waller, Edmund, Esq. *Hoe-street, Walthamstow, E.*
- 1864 Waller, Rev. Horace. *The Vicarage, Leytonstone.*
- 1863 Wallich, George C., Esq., M.D. 60, *Holland-road, Kensington, W.*
- 1872 *Wallroth, Chas. Henry, Esq. *Woodclyffe, Chislehurst.*
- 1860 Walpole, Capt. the Hon. F., M.P. 14, *Dean-street, Park-lane, W.; and Rainthorpe-hall, Long Stratton, Norfolk.*
- 1863 Walpole, Rt. Hon. Spencer, M.P., F.R.S. 109, *Eaton-square, S.W.*
- 1853 Walter, Henry Fraser, Esq. *Papplewick-hall, near Nottingham.*
- 1863 Walton, J. W., Esq. 26, *Savile-row, W.*
- 1864 Walton, R. G., Esq., C.E. *Bombay.*
- 1853 2390 *Ward, George, Esq.
- 1860 Ward, Admiral J. Hamilton. *Oakfield, Wimbledon-park, S.W.*
- 1868 Ward, Captain the Hon. Wm. John, R.N. *H.M. Legation, Washington. Care of Messrs. Chard, 3, Clifford's Inn, E.C.*
- 1869 Ward, William Robert, Esq. *Nea-house, Christchurch, Hants.*
- 1862 Wardlaw, John, Esq. 44, *Prince's-gardens, Hyde-park, S.W.*
- 1868 Wardlaw, Major-General Robert, C.B. *United Service Club, S.W.*
- 1864 Warner, E., Esq. 49, *Grosvenor-place, S.W.*
- 1859 Warne, Arthur B., Esq. 109, *Onslow-square, S.W.*
- 1872 Warre, Rev. Edmond, M.A. *Eton College.*
- 1869 Warre, Major-General H. J., C.B. *United Service Club, S.W.*
- 1869 2400 Warren, Charles, Esq. 17, *Munroe-street, Peckham, S.E.*
- 1862 Warren, Captain Richard Pelham. *Worting-house, Basingstoke.*
- 1867 Washbourn, B., Esq., M.D., &c. *Eastgate-house, Gloucester.*
- 1867 Waterhouse, George Marsden, Esq. *Care of Messrs. Morrison and Co., Philpot-lane, E.C.*
- 1871 Wates, Edward, Esq. *Glenthorne, 15, Harmer-street, Gravesend.*
- 1852 Watkins, John, Esq., F.R.C.S., F.S.A.
- 1862 Watney, John, Esq. 16, *London-street, Fenchurch-street, E.C.*
- 1859 Watson, James, Esq. 24, *Endsleigh-street, W.C.*
- 1860 Watson, James, Esq., Barrister-at-Law. *Lingley-house, Langley, Bucks.*
- 1861 Watson, John Harrison, Esq. 28, *Queensborough-terrace, Kensington-gardens, W.*

Year of Election.	
1868	2410 Watson, Robert, Esq. 32, <i>Inverness-road, Bayswater, W.</i>
1872	Watson, Robert, Esq. <i>Fulcott-house, North-hill, Highgate, N.</i>
1867	Watson, Robert Spence, Esq. <i>Moss Croft, Gateshead-on-Tyne.</i>
1870	Watson, Thos., Esq., Portuguese Vice-Consul, Cape Town. <i>Care of J. R. Thomson and Co., St. Peter's-chambers, E.C.</i>
1863	Watson, Wm. Bryce, Esq. 3, <i>Lime-street-square, E.C.</i> ; and 29, <i>Duke-street, St. James's, S.W.</i>
1872	Watts, H. Cecil, Esq. 13, <i>Randolph-road, Maids-hill, W.</i>
1871	Watt, Robert, Esq., C.E. <i>Ashley Avenue, Belfast.</i>
1837	*Waugh, Maj.-General Sir Andrew Scott, Bengal Engineers, F.R.S., late Surveyor-General and Superintendent Great Trig. Survey. <i>Athenaeum Club, S.W.</i> ; and 7, <i>Petersham-terrace, Queen's-gate-gardens, South Kensington, S.W.</i>
1868	Webb, Edward B., Esq., C.E., &c. 34, <i>Great George-street, S.W.</i>
1872	Webb, Geo. P., Esq. <i>Junior Athenaeum Club, Piccadilly, W.</i>
1858	2420* Webb, Capt. Sydney. <i>Oriental Club, Hanover-square, W.</i> ; and 24, <i>Manchester-square, W.</i>
1862	*Webb, William Frederick, Esq. <i>Army and Navy Club, S.W.</i>
1838	*Webber-Smith, Major-General James, 95th Regiment.
1865	Webster, Alphonsus, Esq. 44, <i>Mecklenburgh-square, W.C.</i>
1864	Webster, E., Esq. <i>North-lodge, Ealing, W.</i>
1858	Webster, George, Esq., M.D., J.P. <i>Dulwich, S.E.</i>
1866	Webster, George, Esq. 40, <i>Finchbury-circus, E.C.</i>
1860	Weguelin, Thomas Matthias, Esq., M.P. <i>Peninsular and Oriental Steam Navigation Co., Moorgate-street, E.C.</i>
1872	Weise, Jno., Esq. 103, <i>St. George's-road, Pinlicko, S.W.</i>
1851	Weller, Edward, Esq. 34, <i>Red-lion-square, W.C.</i>
1853	2430* Wellington, Arthur Richard, Duke of, Major-General, D.C.L. <i>Apsley-house, W.</i> ; and <i>Strathfeldsaye, Hampshire.</i>
1870	*Wells, Arthur, Esq. <i>Nottingham.</i>
1872	Wells, Commander J. C., R.N. <i>Southborough, Bickley, Kent.</i>
1864	Wells, Sir Mordaunt, late Chief Puisne Judge, Bengal. 107, <i>Victoria-st., S.W.</i>
1862	Wells, William, Esq. 22, <i>Bruton-street, W.</i> ; and <i>Redleaf, Penshurst, Kent.</i>
1863	Welman, Charles, Esq. <i>Norton-manor, Taunton.</i>
1868	Wentworth, William Charles, Esq.
1857	West, Lieut.-Colonel J. Temple.
1870	West, Raymond, Esq., Bomb. Civ. Serv.
1873	West, William Nowell, Esq. 30, <i>Montagu-street, Russell-square, W.C.</i>
1872	2440 Westendorp, Charles H., Esq. 51, <i>Lansdowne-road, Kensington-park, W.</i>
1867	*Westlake, John, Esq. 16, <i>Oxford-square, W.</i>
1853	Westmacott, Arthur, Esq. <i>Athenaeum Club, S.W.</i>
1852	Weston, Alex. Anderdon, Esq., M.A. 74, <i>Queen's-gate, W.</i>
1862	Westwood, John, Esq. 8 and 9, <i>Queen-street-place, Southwark-bridge, E.C.</i>
1630	*Weyland, John, Esq., F.R.S. <i>Woodrising-hall, Norfolk.</i>
1866	Wharnccliffe, Lord. 13, <i>Curzon-street, W.</i>

Year of Election.

- 1861 Wharton, Rev. J. C. *Willasden-vicarage, N.W.*
- 1858 Wheatley, G. W., Esq. 150, *Leadenhall-street, E.C.*
- 1859 Wheelwright, William, Esq. *Gloucester-lodge, Regent's-park, N.W.*
- 1869 2450 Whiclow, James Sherer, Esq. 42, *Waltham-grove, Fulham, S.W.*
- 1853 *Whinsfield, Edward Wrey, Esq., B.A. *South Elkington-vicarage, Louth.*
- 1839 *Whishaw, James, Esq., F.R.S.A. 32, *Harewood-square, N.W.*
- 1867 Whitaker, Thomas Stephen, Esq. *Eccarthorpe-hall, East Yorkshire; and Conservative Club, S.W.*
- 1869 Whitby, Rev. Thomas, M.A., &c. *St. John's-terrace, Woodhouse Moor, Leeds.*
- 1857 White, Arthur D., Esq., M.D. 56, *Chancery-lane, W.C.*
- 1865 White, Lieut. Arthur Wellesley, B.A. *Kingston, Canada. Care of Capt. T. P. White, R.E., Ordnance Survey, Edinburgh.*
- 1857 White, Henry, Esq., F.R.S., J.P. 95, *Queen's-gate, Hyde-park, W.; and The Lodge, Hillingdon-heath, near Uxbridge.*
- 1869 White, Robert Owen, Esq. *The Priory, Lewisham, S.E.*
- 1866 White, W. A., Esq., H.M. Consul, Danzig. *Care of G. C. Rowland, Esq., Librarian's Dept., Foreign-office, S.W.*
- 1852 2460 White, William Foster, Esq. *Treasurer, St. Bartholomew's-hospital, E.C.*
- 1863 *White, William O., Esq. 10, *Lincolns-st., E.C.; and Barnsfield, near Dartford, Kent.*
- 1873 *Whitehead, Chas., Esq., F.R.S. *Barmby-house, Maidstone.*
- 1862 Whitehouse, William Matthew Mills, Esq. 45, *Chepstow-place, Daywater, W.; and Hardwicks-house, Studley, Warwickshire.*
- 1873 Whitford, John, Esq. *Care of Messrs. Sinclair, Hamilton and Co., 17, St. Helen's-place, E.C.; and Alfred-street, Liverpool.*
- 1865 Whympere, Edward, Esq. *Town-house, Haslemere.*
- 1864 Whyte, M. B., Esq. 83, *Belyntree-road, S.W.*
- 1870 Whyte, W. Anthony, Esq. *Conservative Club, S.W.*
- 1869 Whytt, Ebenezer, Esq. *The Grove, Highgate, N.*
- 1871 Wiggins, Joseph, Esq. (Exam. in Navig., &c.). 4, *The Elms, Sunderland.*
- 1870 2470 Wilder, Frederick, Esq. *Purley-hall, Reading.*
- 1867 Wilkins, J. E., Esq. 4, *Paper-buildings, Inner Temple, E.C.*
- 1866 Wilkinson, Alfred, Esq. 14, *Eleaston-place South Kensington, S.W.*
- 1860 *Wilkinson, Major A. Eastfield, B.A. *Oudh Commission, India; 7, Cavendish-place, Brighton; and Army and Navy Club, S.W.*
- 1854 Wilkinson, Frederick E., Esq., M.D. *Sydenham, Kent, S.E.*
- 1865 Wilkinson, Dr. G. 4, *St. John's-wood-villas, St. John's-wood, N.W.*
- 1865 Wilkinson, J. J., Esq. 31, *Springfield-road, St. John's-wood, N.W. Nova, Carlshaga, Jernvaag, 31, Duke-street, Westminster, S.W.*
- 1839 *Wilkinson, Sir John Gardner, D.C.L., F.R.S. *Brynsfield-house, Reynoldston, Gower, Glamorgan.*
- 1868 Wilkinson, James J., Esq.
- 1872 *Willans, John Amerson, Esq. 2, *Glasgow-terrace, Lupus-street, Pimlico, S.W.*
- 1870 2480 Wilks, George, Esq. *Boston Spa, Tadcaster, Yorkshire.*

Year of
Election.

- 1857 Willecock, J. W., Esq., Q.C. 6, *Stone-buildings, Lincoln's-inn, W.C.:* and *Rosenstead, Avenue-road, St. John's-wood, N.W.*
- 1872 Willems, Edouard Henri Léonard, Esq. 79, *Seymour-street, Hyde-park, W.*
- 1869 Williams, Charles Henry, Esq. *Churchill-house, Churchill, Somersetshire.*
- 1863 Williams, Frederick G. A., Esq. *Chapel-stairs, Lincoln's-inn, W.C.*
- 1856 Williams, Henry Jones, Esq. 10, *Hereford-street, Park-lane, W.;* and 82, *King William-street, E.C.*
- 1856 Williams, Henry R., Esq. 183, *Camden-road, N.*
- 1857 Williams, Major-General Sir Wm. F., Bart., K.C.B., D.C.L., *Commander-in-Chief, Canada. Army and Navy Club, S.W.*
- 1867 Williams, W. Rhys, Esq., M.D. *Royal Bethlehem Hospital, S.*
- 1873 Williams, John Robert, Esq. *Junior Carlton Club and Carlton-chambers, 12, Regent-street, W.*
- 1868 2490*Williams, Michael, Esq. *Treyallow, Scorrier, Cornwall.*
- 1868 *Williams, F. M., Esq. *Goonvrea, Penryn, Arworthal, Cornwall.*
- 1859 Willoughby, Henry W., Esq. 35, *Montagu-square, W.*
- 1867 Wills, William Henry, Esq., J.R. *Hawthornden, Clifton Down, Bristol.*
- 1870 Wills, Peter Turner, Esq. *Blackheath-park, Blackheath, S.E.*
- 1868 Wilson, Alexander, Esq. 24, *Highbury-place, N.*
- 1869 Wilson, Captain Charles William, R.E. 4, *New-street, Spring-gardens, S.W.*
- 1865 Wilson, E., Esq. *Hayes-place, Bromley, Kent.*
- 1872 Wilson, John Peter, Esq. *The Mount, Totnes, South Devon.*
- 1872 Wilson, Robert B. W., Esq. 3, *Beaufort-gardens, W.*
- 1862 2500*Wilson, Robert Dobie, Esq. 15, *Green-street, Grosvenor-square, W.*
- 1869 Wilson, Samuel King, Esq. 3, *Portland-terrace, Regent's-park, N.W.*
- 1869 Wilson, Rev. T. Given, B.A. 23, *Wynell-road, Forcote-hill, S.E.*
- 1854 *Wilson, Captain Thomas, R.N.
- 1872 Wilson, William Thomas, Esq. *Oriental Club, W.*
- 1860 Wilson, Thomas, Esq. 38, *De Beauvoir-road, Kingsland, N.*
- 1866 Wiltshire, Rev. Thomas, M.A., F.G.S., F.L.S. 25, *Grangeville-park, Lewisham, S.E.*
- 1868 *Winch, W. Richard, Esq. *Chislehurst, Kent.*
- 1870 Winchester, C. A., Esq. *Oriental Club, W.*
- 1846 *Winchester, Right Rev. Samuel Wilberforce, Lord Bishop of, F.R.S., F.S.A. 19, *St. James's-square, S.W.*
- 1873 2510Windram, James, Esq. (Banker). 80, *King William-street, E.C.*
- 1862 Wing, Commr. Arthur, R.N. *Care of Messrs. Case and Loudensack, James-street, Adelphi.*
- 1863 Wingate, T. F., Esq. 18, *Abdon-street, Hyde-park-square, W.*
- 1870 Wiseman, James, Esq. 1, *Orme-square, Finsbury, W.*
- 1870 Wiseman, Lieut. W., R.N. 83, *Belgrave-road, S.W.;* and *Lagos, W. Africa. Care of Messrs. Case and Loudensack, 1, James-street, Adelphi, W.C.*
- 1864 Wolehouse, J. H., Esq., H.M.'s Commissioner and Consul-General for the Sandwich Islands.

Year of
Election.

- 1870 Wodehouse, Sir Philip, K.C.B., Governor of Bombay. *Care of E. R. Wodehouse, Esq., 17, Half-moon-street, Piccadilly, W.*
- 1866 • Wolff, Sir Henry Drummond, K.C.M.G. 15, Rutland-gate, S.W.; and *Athenæum Club, S.W.*
- 1863 Wood, Henry, Esq. 10, Cleveland-square, Hyde-park, W.
- 1865 Wood, Lieut.-Colonel Wm., R.M. 4, Hyde-park-terrace, Cumberland-gate, W.
- 1868 2520 • Wood, Richard Henry, Esq., F.S.A. *Crumpsall, near Manchester.*
- 1872 Wood, Captain Alexander (Bombay Staff Corps). *Heath-lodge, Abbey-wood, Kent, S.E.; and 14, St. James's-square, S.W.*
- 1870 Wood, Captain T. P. *Holly-bank, Rushall, Tunbridge-wells.*
- 1857 Woodhead, Major H. J. Plumridge. 44, Charing-cross, S.W. ?
- 1867 Woodfield, Mathew, Esq., M.I.C.E. *General Colonial Manager, Cape Copper Mining Co., Namaqualand, Cape of Good Hope. 43, Ladbroke-grove-road, Notting-hill, W.*
- 1862 Woods, Samuel, Esq. *Mickleham, near Dorking, Surrey.*
- 1864 Woolcott, George, Esq. 78, Palace-gardens-terrace, Kensington, W.
- 1863 • Worms, George, Esq. 17, Park-crescent, Portland-place, W.
- 1845 Worthington, Rev. James, D.D. 27, John-street, Bedford-row, W.C.
- 1856 Worthington, J. Hall, Esq. *Alton-hill, Oxton, near Birkenhead.*
- 1866 2530 • Worthington, Richard, Esq. 7, Champion-park, Denmark-hill, S.E.
- 1866 Wotton, William G., Esq., M.D. 15, Clement's-inn, W.C.
- 1839 • Wyld, James, Esq. *Charing-cross, W.C.*
- 1863 Wykle, W. H., Esq. *Foreign-office, S.W.*
- 1871 Wynne-Finch, Charles, Esq. 4, Upper Brook-street, W.
- 1867 • Wythes, George Edward, Esq. *Epping, Essex.*
- 1869 Yandley, Sir William. *Hudlow-park, Tambridge, Kent.*
- 1854 Yeats, John, Esq., LL.D. *Clayton-place, Peckham, S.E.*
- 1861 York, Most Rev. William Thomson, Archbishop of, F.R.S. *Bishopthorpe, York.*
- 1859 Yorke, Lieut.-General Sir Charles, K.C.B. 19, South-st., Grosvenor-square, W.
- 1830 2540 • Yorke, Colonel Philip J., F.R.S. 89, Eaton-place, S.W.
- 1857 • Young, Allen, Esq. 1, St. James's-street, S.W.
- 1838 • Young, Charles Baring, Esq. 4, Hyde-park-terrace, W.
- 1830 • Young, James, Esq.
- 1858 Young, James, Esq. *Kelly, Wemyss Bay, by Greenock.*
- 1866 Young, John, Esq., F.S.A. *Yanbrugh-fields, Blackheath, S.E.*
- 1857 Yule, Colonel Henry, C.B., Bengal Engineers. *Messrs. Grindlay & Co., 55, Parliament-street, S.W.*
- 1865 Zouche, Robert Curzon, Lord de la. *Parham-park, Steyning, Sussex; and 24, Arlington-street, W.*
- 1864 2548 Zwickler, J. B., Esq. 2, Denmark-terrace, Brentford-road, W.

LIST OF PUBLIC INSTITUTIONS, &c.,

TO WHICH COPIES OF THE 'JOURNAL' AND 'PROCEEDINGS' ARE PRESENTED.
 [Those marked with an asterisk * receive the Proceedings only.]

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 ASIATIC SOCIETY (Royal)
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 * LIVERPOOL MERCANTILE MARINE ASSO-
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 HANTS.
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 VICTORIA INSTITUTION, 6, Adelphi-terrace,
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 ZOOLOGICAL SOCIETY

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AMSTERDAM . . . Royal Acad. of Sciences
 ATHENS . . . University Library
 AUSTRIA . . . Meteorological Society
 BELGIUM . . . Royal Acad. of Science
 . . . Geographical Society
 BERLIN . . . Academy of Sciences
 . . . Geographical Society
 BREMEN . . . German Polar Society.
 CHRISTIANIA . . . University Library
 COPENHAGEN . . . Hydrographic Office
 . . . Royal Danish Ordnance
 Survey
 . . . Royal Society of Sciences
 . . . of North-
 ern Antiquaries
 DIJON . . . Académie des Sciences,
 Arts et Belles-Lettres
 DARMSTADT . . . Geographical Society
 DRESDEN . . . Statistical Society
 FLORENCE . . . Italian Geographical Soc.
 . . . Ministry of Public In-
 struction
 . . . National Library of

FRANKFORT . . . Geographical Society
 GENEVA . . . Geographical Society of
 . . . Soc. of Natural History
 GENOA . . . Museo Civico di
 *GOTHA . . . Perthes, M. Justus
 HAGUE (THE) . . . Royal Institute for Geo-
 graphy and Ethnology
 of Netherland India
 HALLE AND } German Oriental Society
 LEIPZIG }
 JENA . . . University of
 LEIPZIG . . . Verein von Freunden der
 Erdkunde zu
 LISBON . . . Royal Acad. of Sciences
 MADRID . . . Royal Acad. of Sciences
 MILAN . . . Lombardo-Veneto Insti-
 tute of
 MUNICH . . . Bibliothèque Centrale
 Militaire
 . . . Royal Library
 PARIS . . . Institut National
 . . . Académie des Sciences

EUROPE—continued.

PARIS	Annales de l'Agriculture et des Régions Tropicales (Madinier, M.)	ST. PETERSBURG	Imperial Geographical Society
—	Bibliothèque Nationale	STOCKHOLM . .	Bureau de la Recherche Géologique de la Suède.
—	Dépôt de la Guerre	—	Royal Academy of Sciences.
—	Dépôt de la Marine	STRASBURG . . .	Municipal Library
—	Ministère de la Marine et des Colonies	—	Société des Sciences Naturelles
—	Société Asiatique	TUBINGEN	University Library
—	Société d'Ethnographie	*UTRECHT	Royal Dutch Meteorological Institute
—	Société d'Encouragement pour l'Industrie Nationale	VENICE	Armenian Convent Lib.
—	Société de Géographie	VIENNA	Imperial Academy of Sciences
PESTH	Hungarian Academy of Sciences	—	Imperial Geographical Society
*PRAGUE	Bohemian Royal Museum	—	Imperial Geological Institute
ROME	Accademia dei Lincei	ZÜRICH	Society of Antiquaries
ST. PETERSBURG	Imperial Academy of Sciences	—	Society of Naturalists

ASIA.

BOMBAY	Geographical Society	KURRACHEE . .	Gen. Lib. and Museum
—	Asiatic Society	MADRAS	Literary and Philosoph. Society
CALCUTTA	Asiatic Society of Bengal	SHANGHAI . . .	Royal Asiatic Society (North China Branch)
—	Geolog. Survey of India	SINGAPORE . . .	Journal of Indian Archipelago
—	Public Library		
DZHIRA DHOON .	Great Trigonometrical Survey of India, Library of		

AFRICA.

CAIRO	Egyptian Society
CAPE TOWN . . .	The Public Library

AMERICA.

ALBANY	New York State Library	PHILADELPHIA,	Academy of Natural Sciences
BOSTON	American Society of Arts and Sciences	—	American Philosophical Society
—	Massachusetts State Library	—	Franklin Institute
—	Public Library	QUEBEC	Library of the Parliament of Canada
—	Society of Nat. History	SAN FRANCISCO	Mercantile Lib. Association
BRAZIL	Historical and Geographical Institute of	TEXAS	Soule University.
CALIFORNIA . . .	Academy of Sciences	*TORONTO	Department of Public Instruction for Upper Canada
CHICAGO	The New Library	—	Canadian Institute of
CHILE	University of	WASHINGTON . .	Congress Library of
MEXICO	Geographical and Statistical Society of	—	Smithsonian Institution
NEW HAVEN . . .	Yale College Library	—	National Observatory
*—	Stillman's Journal	WORCESTER . . .	Antiquarian Society
NEW YORK . . .	Geographical and Statistical Society		

AUSTRALASIA.

ADELAIDE	Library of the Legislature	TASMANIA	Royal Society
—	South Australian Institute	—	Public Library
MELBOURNE . . .	Public Library	*VICTORIA	Royal Society
*—	Mining Department		
SYDNEY	University Library	NEW ZEALAND . .	Library of the House of Representatives

NAMES OF INDIVIDUALS TO WHOM THE ROYAL PREMIUMS AND OTHER TESTIMONIALS HAVE BEEN AWARDED.

-
- 1832.—Mr. RICHARD LANDER—Royal Medal—for the discovery of the course of the River Niger or Quorra, and its outlet in the Gulf of Benin.
- 1833.—Mr. JOHN BISCOE—Royal Medal—for the discovery of the land now named "Enderby Land" and "Graham Land," in the Antarctic Ocean.
- 1834.—Captain Sir JOHN ROSS, R.N.—Royal Medal—for discovery in the Arctic Regions of America.
- 1835.—Sir ALEXANDER BURNES—Royal Medal—for the navigation of the River Indus, and a journey by Balkh and Bokhara, across Central Asia.
- 1836.—Captain Sir GEORGE BACK, R.N.—Royal Medal—for the discovery of the Great Fish River, and its navigation to the sea on the Arctic Coast of America.
- 1837.—Captain ROBERT FITZROY, R.N.—Royal Medal—for the survey of the Shores of Patagonia, Chile, and Peru, in South America.
- 1838.—Colonel CHESNEY, R.A.—Royal Medal—for the general conduct of the "Euphrates Expedition" in 1835-6, and for accessions to the geography of Syria, Mesopotamia, and the Delta of Susiana.
- 1839.—Mr. THOMAS SIMPSON—Founder's Medal—for the discovery and tracing, in 1837 and 1838, of about 300 miles of the Arctic shores of America.
- Dr. EDWARD RÜPPEL—Patron's Medal—for his travels and researches in Nubia, Kordofán, Arabia, and Abyssinia.
- 1840.—Col. H. C. RAWLINSON, R.L.C.—Founder's Medal—for his travels and researches in Susiana and Persian Kurdistan, and for the light thrown by him on the comparative geography of Western Asia.
- Sir R. H. SCHOMBURGK—Patron's Medal—for his travels and researches during the years 1835-9 in the colony of British Guayana, and in the adjacent parts of South America.
- 1841.—Lieut. RAPER, R.N.—Founder's Medal—for the publication of his work on 'Navigation and Nautical Astronomy.'
- Lieut. JOHN WOOD, I.N.—Patron's Medal—for his survey of the Indus, and re-discovery of the source of the River Oxus.
- 1842.—Captain Sir JAMES CLARK ROSS, R.N.—Founder's Medal—for his discoveries in the Antarctic Ocean.
- Rev. Dr. E. ROBINSON, of New York—Patron's Medal—for his work entitled 'Biblical Researches in Palestine.'
- 1843.—Mr. EDWARD JOHN EYRE—Founder's Medal—for his explorations in Australia.
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- „ 145. Burgdorf.
- „ 333. Oberbahn.
- „ 336. Münsingen.
- „ 337. Konolfingen.

Forming part of Map of Switzerland in 546 sheets. Scale 3 inches = 1 mile.

Colonel SIEGFRIED,
Chief of Federal Survey, Bern.

Carte topographique et routière de la Suisse et des Contrées limitrophes. Scale 1 inch = 5½ miles (geo.). Dressée et dessinée par Jean-Frédéric d'Osterwald. Paris.

Topographische Karte der Kantone St. Gallen und Appenzell. On 16 sheets. Par J. M. Ziegler K. R. MURCHISON, Esq.

Grindelwald. Scale ¾ inch = 1 mile (geo.). Von A. Petermann. Gotha, 1871 The AUTHOR.

TURKEY—

Generalkarte von der Europäischen Türkei. Nach allen vorhandenen Originalkarten und itinerarischen Hülfsmitteln bearbeitet und gezeichnet von Heinrich Kiepert. Scale 1 inch = 14½ miles (geo.). On 4 sheets. Berlin, 1871 The AUTHOR.

Originalkarte der Central-Türkei, nach Aufnahmen vom Jahre 1869 entworfen von Ferdinand von Hoechstetter, 1870. Scale 1 inch = 6 miles (geo.). Von A. Petermann. Gotha, 1872.

Dr. PETERMANN.

Maps, Charts, &c.

Donors.

Carte de l'Épire et de la Thessalie. Scale 1 inch = 7 miles (geo.). On 2 sheets. Dessinée par Henri Kiepert. Berlin, 1871.

The Author.

ASIA.

CENTRAL—

Asia in the first half of the fourteenth century, to elucidate 'Cathay and the Way Thither.' Compiled by Colonel H. Yule.

E. WELLER, Esq.

CHINA—

Chinese Map of China in 32 parts. Published in 1862 by King-Hang-Low, Acting Governor of Hoo-peh.

Topography of China and neighbouring States, with Degrees of Longitude and Latitude. Hong Kong, 1864.

Chinese Map of Eastern China. On 3 sheets.

The Yellow River (Upper Section) from Yü-Shan to the Old Bed.

The Yellow River (Lower Section) from the Bar to Yü-Shan. Scale 1 inch = 2 miles (geo.). By Ney Elias, Jun. London, 1868. 2 copies.

Running Survey of the Po-Yang Lake, from Hu-Kow to Khoo-Khe, thence to Woo-chin on the South and Cockchafer Islands, on the South-East. Taken from the Survey of Lieutenant Kerr, R.N., Commanding H.M.S. Cockchafer; the remainder by H. G. Hollingworth. Scale 1 inch = 2 miles (geo.). H. G. HOLLINGWORTH, Esq.

Po-Yang Lake, Hu-Kau to Wu-Ching, &c. Yuen-Chow. Scale 1 inch = 2 miles (geo.). By W. Stuart, Commanding H.M.S. Etna. January, 1868. M.S.

F. von Richthofen's Reisen in China. Sept. 1868—Mai 31, 1870. Ney Elias' Aufnahme des Hoang Ho von Khaifung bis zur Mündung, 1868. Shuffeldt's and Febiger's Aufnahmen in Korea, 1867-68. Scale 1 inch = 104 miles (geo.). Von A. Petermann. Gotha, 1871. The Author.

INDIA—

MAPS OF THE GOVERNMENT SURVEY OF INDIA, 41 Maps on 212 sheets.

TITLE.	No. of Sheets.	Scale.	Date.
Indian Atlas. Sheets 1, N.E.; 1A, S.E.; 8, S.W. and S.E.; 87, S.W. and S.E.; 125, S.W.; 131, S.W. }	8	1 = 4	
Bundeelund Topographical Survey. Sheets, 31, 33, 35, 37, 39, 47, 49, 51 }	8	1 = 1	1869-70
Central Provinces and Vizagapatam Agency Topographical Survey. Sheets 6, 17, 18, 19, and 45 }	5	1 = 1	1868-70
Central Provinces Survey. Degree Sheets 2, 4, and 6	3	1 = 4	
Central Provinces Topographical Survey. Sheets 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, and Index }	22	1 = 1	1866-70
Chota Nagpore Topographical Survey. Sheets 53 and 66 }	2	1 = 1	1867-70
Gwalior and Central India Topographical Survey. Sheets 5A, 6B, 7A, 9A, 10A, 11A, 17, 36, 48, 49, 50, 52, and 53 }	13	1 = 1	1861-70
Kattywar Topographical Survey. Sheets 6, 8, 9, 14, 15, 17, 18, 19, and Index }	9	1 = 1	1866-70

MAPS OF THE GOVERNMENT SURVEY OF INDIA—continued.

TITLE.	No. of Sheets.	Scale.		Date.
		Inches.	Miles.	
Oudh Revenue Survey. Sheets 37, 47, 48, 49, 51, 52, and 53	7	1 =	1	1865-69
Rajpootana Topographical Survey. Sheets 27 and 32	2	1 =	1	1869-70
Sindh Revenue Survey. Sheets 3, 7, 12, 13	4	1 =	4	1870-1
Sindh Revenue Survey. Sheets 20, 22, 29, 31, 32, 33, 40, 41, 42, 50, 54, 55, 64, 66, 67, 71, 79, 85, 86, 87, and Index	21	1 =	1	1856-68
District Bhundara (Preliminary Map)	1	1 =	4	1858-67
District Cachar	1	1 =	4	1865-8
District Cachar	1	1 =	4	1871
District Chanda. Sheets 1, 2, 4, 5, 6, 8, 9, 12, 13, 16, and Index	11	1 =	1	1865-9
District Dumoh. Sheets 1, 3, 5, 7, 9, 11, and 12	7	1 =	1	1863-6
East Dooars (District Goalpara)	1	1 =	4	1868-9
District Goojranwaluh	4	1 =	2	1852-5
Hazaruh District	15	1 =	1	1870
District Julpigooree	1	1 =	4	1857-68
District Nimar. Sheets 1, 3, 7, 8, 9, 10, 11, 12, 13, and Index	10	1 =	1	1866-70
Ranikhet District	11	12 =	1	1870
District Seonee	10	1 =	1	1870
District Seonee	1	1 =	4	1865-9
Part of Beluchistan, with part of Mekran and the Perso-Beluch Boundary	1	1 =	9	1871
The Dehra Doon, with Mussoorie and Landour	1	1 =	2	1867
Eastern Bengal, Bormah, and parts of China and Siam	4	1 =	32	1870
Eastern British Frontier bordering on Bormah and Munceepoor	1	1 =	6	1871
Jamoo Territories, Dominion of H. H. Rumbir Singh	3	1 =	2	1857-60
Killah Ranapur (Cutlack Tributary Mchals)	1	1 =	1	1852-3
Forest Map of Mysore	1	1 =	8	1871
Parts of Ulwur and Shekawati States (No. 1 Degree Sheet, Rajpootana Survey)	1	1 =	4	
Agra, Cantonment, City, and Environs	6	6 =	1	1868-9
		Chains		
City and Fort of Bharrtpore	1	1 =	10	1857-8
Civil Station and Environs of Chindwara	1	6 =	1	1869-70
Country round Delhi	1	1 =	2	1871
Fortress and City of Gwalior with Cantonment of Mqar and Environs	4	6 =	1	1871
		Mile		
City and Cantonment of Jnbbalpoor	2	8 =	1	1866
Cantonment and Environs of Philor	2	6 =	1	1869-70
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HER MAJESTY'S SECRETARY OF STATE FOR INDIA,
through the India Office.

Maps, Charts, &c.

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Map of the Ahmedpoor, Lummah, and Khanpore Nizamats in the Bhawalpoor State. Compiled from Compass Surveys plotted on a Skeleton Map of the Great Trigonometrical Survey of India, 1869. Scale 1 inch = 4 miles (geo.). By John W. Barns, Superintendent Canal Irrigation. Bhawalpoor, 1870.

Map of the Ooch Nizamut in the Bhawalpoor State. Compiled from Compass Surveys plotted on a Skeleton Map of the Great Trigonometrical Survey of India, 1869. Scale 1 inch = 4 miles (geo.). By John W. Barns, Superintendent Canal Irrigation. Bhawalpoor, 1870.

Map of the Bahawalgurb Nizamut in the Bhawalpoor State. Compiled from Compass Surveys plotted on a Skeleton Map of the Great Trigonometrical Survey of India, 1869. Scale 1 inch = 4 miles (geo.). By John W. Barns, Superintendent Canal Irrigation. Bhawalpoor, 1870.

Sketch Map illustrating the Levels taken over the Bangur Land and part of the Khadir Land in the Bhawalpoor and part of the Bikaner States during the years 1869-1870. To accompany Mr. Barns' Report on the Bhawalpoor State. Scale 1 inch = 8 miles. By John W. Barns, Superintendent Canal Irrigation. Bhawalpoor, 1870.

Sections taken at three different points from the Rivers Sutledge and Indus to the Bikaner Frontier. To accompany Report on the Bhawalpoor State. Hor. scale 1 inch = 8 miles (geo.). By John W. Barns, Superintendent Canal Irrigation. Bhawalpoor, 1870.

Section of Ground from Ameera, on the Sutledge River, in the Ferozepoor District, through the Hukra Nawal or Wahund Depression, to Kundu-walee. To accompany Report on the Bhawalpoor State. Hor. scale 1 inch = 8 miles (geo.). By John W. Barns, Superintendent Canal Irrigation. Bhawalpoor, 1870 The Author.

Quellgebiet des Indus und Sattledsch nach den Routen-Aufnahmen der Pandits (Indier) sowie den Forschungen Strachey's, der Gebrüder v. Schlagintweit u. A. Scale 1 inch = 14 miles. Von F. Haemann and A. Petermann. Gotha, 1871 Dr. PETERMANN.

Sketch Map of Eastern Bengal and Burma to confines of China, showing direct line from India through Burma to China, and the country of the present Looshai Expedition. Scale 1 inch = 29 miles (geo.). Issued with the 'Arakan News,' November 30th, 1871.

The Editor.

Map of the Hindn Kush and the Regions adjoining, to illustrate the journey of Benedict Goës. Scale 1 inch = 40 miles.

E. WELLER, Esq.

Map of the Routes from Leh to Yarkand and Kashgar. From rough Surveys and Observations for Latitude and Longitude made by R. B. Shaw in the years 1869-70. (Photograph from MS. drawing.) Scale 1 inch = 15 miles The Author.

Eastern British Frontier, bordering on Burmah and Mannerpoor. Scale 1 inch = 6 miles. From the latest Surveys. Corrected up to April, 1871. Surveyor-General's Office, Calcutta, 1871.

C. R. MARKHAM, Esq.

SIAM—

Map of the City of Bangkok. Compiled from the Surveys of Luang Bhi-Jay-Sar-Oetz, Second King of Siam. Scale $3\frac{1}{4}$ inches = 1 mile. Singapore.

TURKEY—

Karte von Kleinasien, entworfen und gezeichnet nach den neuesten und zuverlässigsten Quellen, hauptsächlich nach den in den Jahren 1838-39 von Baron v. Vincke-Fischer und Baron v. Moltke. Scale 1 inch = 14 miles (geo.). On 6 sheets. Von H. Kiepert. Berlin, 1844 K. R. MURCHISON, Esq.

Maps, Charts, &c.

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AFRICA.

WEST—

MS. Rough Sketch of the Cross and Old Calabar Rivers, Creeks, &c. Scale 2 inches = 1 mile (geo.). By Captain James Brown Walker, F.R.G.S. June, 1871.

Sketch of River Cross, showing Route from Old Calabar River to Ikorofoing. Scale 1 inch = 1 mile (geo.). A Tracing. By Captain J. B. Walker. 1869 The Author.

Die neuesten Aufnahmen und Forschungen in West-Aequatorial-Afrika unter du Chaillu, Genoyer, Walker, Aymes etc. Scale 1 inch = 27 miles (geo.). Von A. Petermann. Gotha, 1872.

Dr. PETERMANN.

Angola. Mappa coordenado pelo Visconde de Sá da Bandeira, Tenente General, Ministro da Guerra, e por Fernando da Costa Leal, Tenente Coronel, Governador de Mossamedes. Scale 1 inch = 17 miles (geo.). On 2 sheets. Lisbon, 1863 K. R. MURCHISON, Esq.

EAST—

Originalkarte von Dr. G. Schweinfurth's Reisen im obern Nilgebiete, 1869 und 1870. Nach Dr. Schweinfurth's eigenen Kartenzeichnungen und mit Zugrundelegung der astronomischen Bestimmungen von J. Petherick. Scale 1 inch = 15 miles (geo.). Von A. Petermann. Gotha, 1871 Dr. PETERMANN.

SOUTH—

Eastern Frontier of the Colony of the Cape of Good Hope (and part of Kafirland), from Algoa Bay to the Great Kei River. Scale 1 inch = 7 miles (geo.). By John Arrowsmith. London, 1851.

K. R. MURCHISON, Esq.

Route of the South African Gold Fields Exploration Company's Expedition. Observed and drawn by Thomas Baines, Esq., F.R.G.S., Commanding. The Barometric Observations by R. J. Jewell, Secretary. Scale 1 inch = 3½ miles (geo.). On 9 sheets. MS.

THOMAS BAINES, Esq.

Natal und Orange-Fluss-Freistaat mit den Diamanten-Feldern. Zur Uebersicht der Aufnahmen von Adolf Hühner, Karl Manch, Edward Mohr u. A. Scale 1 inch = 19 miles (geo.). Von A. Petermann. Gotha, 1871 Dr. PETERMANN.

Colony of Natal. Compiled in the Surveyor-General's Office. P. C. Sutherland, Surveyor-General. Scale 1 inch = 16 miles (geo.). By John Arrowsmith. London, 1864 K. R. MURCHISON, Esq.

AMERICA.

UNITED STATES—

Lower Geyser Basin (Fire Hole River), Wyoming Territory. Surveyed by the Party in charge of F. V. Hayden, U.S. Geologist. 1871. Scale 1 inch = 500 yards. Compiled and drawn from Field Notes and Sketches of A. Schönborn by E. Hergesheimer.

Map of the Upper Geyser Basin (Fire Hole River), Wyoming Territory. Surveyed by the party in charge of F. V. Hayden, U.S. Geologist. Scale 1 inch = 550 feet. Compiled and drawn from Field Notes and Sketches of A. Schönborn by E. Hergesheimer. 1871.

The Yellowstone Lake, showing the Watershed of the Snake, Madison, and Yellowstone Rivers. Scale 1 inch = 2½ stat. miles. Surveyed and drawn by Henry W. Elliott, Artist U. S. Geological Survey. 1871 W. H. JACKSON, Esq., U. S. Geological Survey.

Maps, Charts, &c.

ONORS.

Yellowstone National Park, from Surveys made under the direction of F. V. Hayden, U. S. Geologist. 1871. Scale 1 inch = 10 miles (geo.).
The Author.

Reconnaissance of the Zúñi, Little Colorado, and Colorado Rivers. Made in 1851, under the direction of Colonel J. J. Abert, Chief of Corps Topog. Engineers, by Brevet-Captain L. Sitgreaves, T. E., assisted by Lieut. J. G. Parke, T. E., and Mr. M. H. Kern. Drawn by R. H. Kern. Scale 1 inch = 10 miles. With remarks by J. Barwise. New York, 1852 JACOBSON BARWISE, Esq.

Mississippi River, from Alton to the Gulf of Mexico. Schönbnrg & Co. New York, 1862 CAPT. MAYNE REID.

Sketch Plan of the City of Chicago, showing the extent of the Fire of 1871 A. JENOURE, Esq.

MEXICO—

Map of Mexico, including Yucatan and Upper California. Scale 1 inch = 115 miles (geo.). By S. A. Mitchell. Philadelphia, 1847.
S. M. DRACH, Esq.

Mexique. Scale 1 inch = 140 miles (geo.). Par A. H. Dufour. Paris.

Map of the Principal Roads from Vera Cruz and Alvarado to the City of Mexico, including the Valley of Mexico, Mountains, Lakes, Plains, Volcanoes, &c. Scale 1 inch = 12 miles. By George Stealey, C. E.

Map of the Valley of Mexico and the surrounding Mountains. Scale 1 inch = 5½ miles (stat.). By J. Disternell. New York, 1847.

Battles of Mexico. Survey of the Line of Operations of the U. S. Army under the command of Major-General Winfield Scott, on the 19th and 20th of August, and 8th, 12th, and 13th September, 1847. Drawn by Lieutenant Harcastle, U. S. Topographical Engineers.

Siege of Vera Cruz, by the U. S. troops under Major-General Scott in March, 1847, from Surveys made by Major Turnbull, Captains Hughes, McClellan, and Johnston, Lieutenants Derby and Harcastle, U. S. Topographical Engineers. Scale 1 inch = 450 yards.
Captain MAYNE REID.

SOUTH—

Map of a tract of land from Cordova to Jujuy in the Argentine Republic. Showing the general direction of a projected Railway between these towns made during the Expedition of 1868. By Pompey Moneta, C. E., and Charles W. Campbell, Assistant. By commission of Messrs. Brassey, Wythes, and Wheelwright. Scale 1 inch = 13 miles (geo.).
K. R. MURCHISON, Esq.

Mapa de la Provincia de Cordoba. Scale 1 inch = 20 miles (geo.). Departamento topografico de Provincia de Cordoba.
GEORGE THOMPSON, Esq.

Carta da Foz do Amazonas, entra a Ponta da Tijoca e o Cabo do Norte. Lithographed for J. B. Gonçalves Campos, F. R. O. S. Scale 1 inch = 16 miles (geo.). London, 1872. (2 copies) .. The Author.

Map of the Pongo de Manseriche (Upper Marañon). By J. Smales, Engineer to the Peruvian Government .. W. CHANDLESS, Esq.

Paraguay, 1871. From the Government Survey Map supplied by the Consul-General of Paraguay in London: with letterpress notes on Paraguay, its position and prospects.

Mappa de la Republica del Paraguay levantada en los años 1846 a 1855 por el antiguo Coronel de Ingenieros Don Francisco Wisner de Morgenstern. A large tracing in colours, showing proposed railways, forests, and swamps. Scale 1 inch = 5 miles.

MAXIMO TERRERO, Consul-General of Paraguay.

Maps, Charts, &c.

Donors.

AUSTRALIA.

Spezialkarte von Australien, in 8 Blättern nach originalen und officiellen Quellen. Scale 1 inch = 49 miles (geo.). Von A. Petermann. Gotha, 1871.

Orographische Karte der Provinz Victoria, zur Uebersicht der Höhenmessungen von D. G. Neumayer; construirt und zusammengestellt von A. Petermann. Scale 1 inch = 28 miles (geo.). Gotha, 1871.

Dr. PETERMANN.

Geological Sketch Map of the Parish of Beechworth (Victoria). Scale 1 inch = 40 chains. Surveyed by F. J. Dunn, and published by the Mining Department, Melbourne, 1871.

Sketch Map of Geological Exploration north-east from Champion Bay. By Henry Y. L. Brown, Government Geologist. Perth, 1871.

OCEANS.

ATLANTIC—

Deep-Sea Soundings in the North Atlantic from Ireland to Newfoundland. Scale 1 inch = 67 miles (geo.). By Lieut. J. Dayman, R.N. Admiralty, 1857 K. R. MURCHISON, Esq.

Deep-Sea Sections to illustrate a Paper by Capt. Sherard Osborn, R.N. Compiled by F. Le B. Bedwell, R.N. London, 1872.

Capt. S. OSBORN, R.N.

Physical Map of the Island of Madeira. Scale 1 inch = 1½ mile (geo.). Constructed by Prof. J. M. Ziegler. Winterthur. 2 Maps and Views.

The Geognosy of the Island of St. Helena, illustrated in a series of Views, Plans, and Sections. Accompanied with Explanatory Remarks and Observations. By Robert F. Seale. London, 1834.

K. R. MURCHISON, Esq.

PACIFIC—

Polynisien und der Grosse Ocean, als ethnographische Karte zu Waitz's 'Anthropologie der Naturvölker' entworfen v. D. G. Gerland. Scale 1 inch = 560 miles (geo.). Von A. Petermann. Gotha, 1872.

Dr. PETERMANN.

Map of the Island of Java, to illustrate the researches of Thomas Horsfield, M.D., with the Geographical Preface and Postscript of 'Plantæ Javanicæ Rariores.' London, 1832 K. R. MURCHISON, Esq.

ARCTIC—

Die Karische und Ingorsche Strasse mit der Waigatch-Insel, nach den Russischen Aufnahmen und Messungen von A. Rosenthal's Expedition, 1871. Scale 1 inch = 7 miles (geo.). Von A. Petermann. Gotha, 1872 Dr. PETERMANN.

Kapt. E. H. Johannesen's Umfahrung von Nowaja Semla im September 1870, nach der Karte von J. C. Hansen. Nebst Darstellung der Obi- und Jenisei-Mündungen nach den russischen Aufnahmen. Scale 1 inch = 35 miles (geo.). Von A. Petermann. Gotha, 1871.

Dr. PETERMANN.

CHARTS.

BRITISH ADMIRALTY—

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125 Ostende Roads.

1887 Eider River to Blaavand Point (North Sea).

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Section 3.

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Section 5.

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1198 The Bosphorus.

1766 Cape Ferrat to Cape Bougaroni (Algeria).

2429 The Dardanelles.

Section 6.

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331 Wassaw, Ossabaw, St. Catherine's, and Sapelow Sound (United States).

Section 7.

No. 388 Fernando Noronha (South Atlantic).

Section 8.

No. 230 Margarita Island (West Indies).

502 Carlisle Bay (Barbadoes, West Indies).

9259 Port Savanilla (New Granada).

Section 9.

No. 527 Approaches to Demerara and Essequibo Rivers.

Section 10.

No. 561 Magellan Strait to Gulf of Peñas (South America, West Coast, Sheet 2).

1341 Port Mollendo (South America, Peru).

Section 11.

No. 734 Snez Bay (Red Sea).

1434 Port Nolloth or Robbe Bay.

2091 Table Bay to Donkin Bay (South Africa, West Coast).

Section 12.

No. 145 Khôr Rabbâjy (Beloochistan).

Section 13.

No. 104 Korean Archipelago (Southern portion).

107 Matoya Harbour (Japan).

119 The Naruto Passage (Inland Sea, Japan).

128 Channels between Bingo Nada and Harima Nada (Japan).

131 Karusima No Seto (Japan).

Section 14.

No. 1703 Wilson Promontory (Victoria, Australia).

2506 Port Fairy (Australia, South Coast).

The HYDROGRAPHIC OFFICE, ADMIRALTY,
through Admiral G. H. Richards, R.N., Hydrographer.

FRENCH CHARTS.

Nos. 2064, 2088, 2692, 2693, 2792, 2793, 2822, 2830, 2835, 2843 to 2992.
Total, 156.

DEPÔT DES CARTES ET PLANS DE LA MARINE, PARIS.

MISCELLANEOUS.

View of the Kaiser Franz Josef Fjord in Eastern Greenland, taken from an elevation of 7000 feet, by Lieut. J. Payer (2nd German Arctic Expedition), August 1870. A photograph Dr. PETERMANN.

Three Photographs of the Storr, Island of Skye. K. R. MURCHISON, Esq.

Maps, Charts, &c.

Donors.

Deux Vues géologiques pour servir à la description géologique du Danemark, représentant les falaises de Stevns-Klint et de Møns-Klint. Par C. Puggaard. Copenhague, 1853.

Vues illustratives de quelques Phénomènes géologiques prises sur le Vésuve et l'Etna pendant les Années 1833 et 1834. Par H. Abich. Paris, 1836 K. R. Murchison, Esq.

Portrait of the late Sir Roderick I. Murchison, from the 'Canadian Illustrated News,' Saturday, November 25th, 1871 .. A. JENOUR, Esq.

Diagram of System of International Circulation by Telegraph, Post, or Express, &c. &c. By Charles Bowles. London, 1871. (3 copies.)
The Author.

INSTRUMENTS LENT TO TRAVELLERS.

II. WHITELY, Esq., in South Peru, March 23, 1867—

Pocket Aneroid, No. 89, graduated to 15 inches, by Cary.
Hypsometrical Apparatus, and 3 Boiling-point Thermometers, by Casella

Lieut. V. L. CAMERON, R.N., Zanzibar, 1873—

Two Aneroids, Nos. 176 and 228, graduated to 15 inches, by Carey.
One Compass prismatic, with Lens.
One Artificial Horizon, small, Capt. C. George's pattern.
One Do. Do. roofed.
One Hypsometrical Apparatus, and 7 B. P. Thermometers.
One Brass Protractor, semi-circular.
One Rain Gauge and Measure.
One Sextant, 8-inch, by Troughton.
One Sextant, 6-inch, by Carey.
One Theodolite, 3-inch, with stand, by Troughton.
One Astronomical Telescope.
Also New Instruments to the value of 67*l*. 17*s*. 11*d*.

Lieut. W. J. GRAYDY, R.N., Congo Expedition, 1873—

One Prismatic Compass, with stand.
One Artificial Horizon, roofed.
Two Hypsometrical Apparatus, with 7 B. P. Thermometers.
One Sextant, 6-inch, by Cary.
One Scale, German Silver, Standard of Measure 12 inches.
Also New Instruments to the value of 123*l*. 11*s*. 4*d*.

PRESENTATION

OF THE

ROYAL AND OTHER AWARDS.

(At the Anniversary Meeting, May 27th, 1872.)

ROYAL MEDALS.

THE FOUNDER'S MÉDAL for the year was awarded by the Council of the Society to Colonel H. Yule, c.b., for the eminent services rendered by him to Geography in the publication of his three great works: 1. 'Narrative of a Mission to the Court of Ava in 1855'; 2. 'Cathay and the Way Thither,' 1865; 3. New Edition of 'Marco Polo,' 1871; and in the numerous articles contributed by him to the Geographical and other learned Journals of the Metropolis. The PATRON'S MEDAL was awarded to Robert B. Shaw, for his Journeys in Eastern Turkistan, and for his extensive series of astronomical and hypsometrical observations, which have enabled us to fix the longitude of Yarkand, and have given us for the first time the basis of a new delineation of the countries between Leh and Kashgar.

On presenting the Founder's Medal to Major-General Sir William Baker, on behalf of Colonel Yule, the PRESIDENT spoke as follows:—

"I have to discharge a duty on the present occasion which is doubly agreeable to me. I have, in the first place, to present the Founder's Medal of the Royal Geographical Society to an officer who has been long engaged in kindred studies with myself, and in whose success, therefore, I take the warmest personal interest; and, in the next place, in the unavoidable absence of that officer from England, I have to entrust the Medal to you, Sir, one of my official colleagues, with whom I am in daily relation, and for whose judgment, character, and attainments, I entertain the very highest respect.

"I need not recall to you, Sir, the early career of Colonel Yule in India. Acting, as he did, for so many years under your orders in the Public Works Department of the Government, you must have had abundant opportunities of observing his many high qualities as a

servant of the State, and the many estimable traits of his private character. To high professional attainments he must always have added a natural diligence of habit, combining with it that earnest and conscientious attention to his duties, which is the distinguishing characteristic of an Indian official; and, if we may judge from the many papers which he contributed during his early service in India to scientific journals, he must, further, have possessed from the first a fine literary taste, and a happy facility of composition.

"After performing good service to the Government, both in the Kasia Hills, and in charge of the Western Jumna and Ganges Canals, he was selected, while discharging the responsible duties of an Under Secretary to Government, to accompany, as Secretary and Historiographer, the mission under Major (now Sir Arthur) Phayre, which was sent by Lord Dalhousie to the Court of Ava in the year 1855. On returning from this expedition he compiled and published, amid the horrors of the Indian mutiny, to which he touchingly alludes in the preface, '*A Narrative of the Mission*;' bringing out the work with that completeness of detail in regard to notes and appendices and that luxury of illustration and typography, of which he well understood the value, and which have, in fact, so enhanced the sterling merit of his publications, as to cause them always to rank among the choicest as well as the soundest literature of the day. A very important chapter of this work, '*On the Map of Burmah, and the Descriptive Geography of the Province*,' was transferred, with some slight alterations, to our own '*Journal*,' and at once placed Colonel Yule in the front rank of Asiatic geographers.

"Colonel Yule having succeeded you, Sir, in 1858, as Secretary to Government in the Public Works Department, returned after four and a-half years' further service, to England, and then retired from the army. Being now able to command more spare time than during his career in India, where, as he says, the leisure hours of an official are 'such as he may redeem from meals and sleep, between 8 p.m. and 10 a.m.,' Colonel Yule undertook several important works, demanding the severest application and the soundest critical judgment; and it is upon these works that his present high reputation depends. After breaking ground with *Friar Jordan* in 1863, he presented the Hakluyt Society with his two teeming volumes entitled '*Cathay and the Way Thither*.' The text of this work was sufficiently curious, being a collection of all the extant minor mediæval travels through Central Asia, whether performed by Orientals or Europeans; but its great merit lay in a Preliminary Essay, extending to 250

pages, 'On the Intercourse of China and the Western Nations previous to the Discovery of the Sea-route by the Cape,' and on the wealth of annotation with which the two volumes were throughout enriched. The singular combination of curious research, careful criticism, and extensive reading, which 'Cathay' exhibited, had certainly never been equalled in any of the previous publications of the Hakluyt Society, and rarely, perhaps, in the whole range of English authorship. But it was not till some years later that Colonel Yule put forth his full powers, in his exhaustive and masterly edition of 'Marco Polo;' a work, the publication of which was said at the time, by one of the first critical journals of the day, to form an epoch in Geographical Literature. It is mainly for this noble work, which, beautifully printed and superbly illustrated as it is, will ever remain an imperishable monument of recondite learning, the most cultivated taste, and a sound practical knowledge of geography, that the Council of our Society has this year awarded its Founder's Medal to Colonel Henry Yule. Already, Sir, the distinguished corps in which your earlier career was passed—the Bengal Engineers—has carried off on two occasions the Geographical blue-ribbon of the year. It has now achieved a third triumph. I congratulate the Medallists, among whom I have the honour to rank myself, on being permitted to inscribe the name of Colonel Yule upon our list; and I more especially congratulate the Bengal Engineers on another Medallist being thus added to that glorious brotherhood of professional and literary eminence, which includes the names of Montgomerie, the Strachey, the Cunningham, George Chesney and Andrew Waugh; and among which are also to be found the still more honoured names of Sir Henry Durand, Sir William Baker, and Lord Napier of Magdala. I trust, Sir, that in forwarding this Medal to Colonel Yule, whose unavoidable absence we deplore, you will express to him the high admiration which the Council feel for his zealous and successful labours in the cause of Geography, and the satisfaction we experience in being thus enabled to reward them."

Sir WILLIAM BAKER replied in the following words:—"Sir,—On behalf of my friend Colonel Yule, whose unavoidable absence we all deplore, I beg to offer hearty thanks to the Royal Geographical Society for the high honour this day conferred upon him, and to you, Sir, for the eloquent eulogium in which you have so well set forth his claims to that honour. To myself, personally, it is a source of gratification that I am the appointed 'vehicle' by which

this enviable distinction will reach the hands of one of my earliest and most valued friends. On his account, however, I cannot but regret that he has not heard with his own ears the discriminating praises, which you have so well bestowed upon the results of his labours in the fields of literature and science, and that he has not seen with his own eyes the assent and approval of those praises, reflected from the countenances of your distinguished colleagues. For your sake, too, I am sorry that Colonel Yule is not here to answer for himself; for I am quite sure that the words, warm from the heart, which he would have uttered on such an occasion as this, would have been well worth listening to. And now, Sir, I would add a few words on my own account. I thank you sincerely for the kind but too flattering terms in which you have referred to myself, and still more for the compliment, not undeserved, which you have paid to my dear old corps, the Bengal Engineers."

Next addressing the Meeting, the PRESIDENT thus spoke:—

"The Patron's Medal for this year has been awarded to Mr. R. B. Shaw, for the services he has rendered to the cause of Geography in exploring Eastern Turkistan, and above all for his very valuable astronomical observations, which have not only enabled us to fix the longitude of Yarkand, but have afforded a general basis for a map of Kashgaria. Mr. Shaw, travelling at the same time as, though quite independently of, Mr. Hayward, actually reached the cities of Yarkand and Kashgar in 1869, some weeks before that gentleman, and if our awards had been regulated by mere priority of arrival, he would thus have borne away the prize from his fellow-traveller when the question was first considered; but Mr. Hayward at that time was to a certain extent the Agent of the Society, and he had moreover presented us with the first accurate scientific information regarding the country of Turkistan, so that we decided to give his claims the preference, without, however, in any way disparaging those of Mr. Shaw. Since 1869 Mr. Shaw, however, has a second time visited Yarkand in company with Mr. Forsyth, having been summoned from England for the purpose; and it is mainly for the result of this second expedition that the Medal is now awarded him. Sir Roderick Murchison, in his last Anniversary Address, described in such glowing terms the great geological and geographical value of the survey of the country between the high tablelands at the head of the Karakash River and the valley of the Upper Shayok River, which was executed by Mr. Shaw on his return from

the Yarkand Mission, and which will be found in the forthcoming volume of the 'Journal,' that any commendation of the work from myself would be superfluous; but I may say that it is that remarkable survey,—together with his Register of Observations for Longitude, Latitude, Variation of the Compass and heights of places above the sea-level, which with the necessary calculations extend over 21 pages of the 'Journal,'—that has chiefly influenced us in awarding our Gold Medal to this enterprising and accomplished traveller: while we cannot also but recognize that Mr. Shaw has done good service to general Geography by his popular account of High Tartary, which for the first time has familiarized the British public with those countries beyond the Thibetan frontier that are destined, probably ere long, to play an important part in the history of the East. I am desirous to add that Mr. Shaw, mindful at all times of the interests of the Society, has, since he took up his abode at Leli, in Ladakh, where he has been installed as Commissioner in acknowledgment of his Turkistan services, busied himself in collecting geographical information regarding the adjoining countries. That information, in so far as it is embodied in itineraries leading from the Himalayas to Turkistan, and from Yarkand to Peking, has been already submitted to us, and proves to be of great value for the better understanding of the physical geography of Central Asia, thereby furnishing Mr. Shaw with an additional claim on our favourable notice.

"My predecessor in this chair was careful to explain that in awarding our Medals we were governed by Geographical considerations alone, and I trust that under my Presidency we shall always adhere to that principle; but there is no concealing the fact that, in the case of Mr. Shaw, the geographical value of his explorations is greatly enhanced by the uncertainty which hangs over the political future of the country he has explored; for it cannot be overlooked that as Russia has lately recovered for China, from the Mahomedan rebels, the alienated province of Dzungaria, so may a similar policy at any time be declared in regard to Kashgaria; and if Russian troops were thus to occupy Kashgar and Yarkand as they have occupied Kuldja, they could not, of course, be withdrawn until the Chinese were prepared to take their place; so that our feudatory of Cashmere might be brought into continued, though not perhaps unfriendly, contact with his great Northern neighbour. It is the interest attaching to this possible state of affairs, and its importance to our British-Indian Empire, that invests Mr. Shaw's travels with

particular value at the present time, and makes him, in fact, the hero of the hour."

Turning to Mr. R. B. Shaw, the President continued:—"I am delighted to find, Sir, since I drew up this brief recapitulation of your geographical services, that you have arrived in England, and are thus able in person to receive from me the Medal you have so well earned by your travels and researches in Central Asia. I congratulate you, Sir, on your return to your native land at such an auspicious moment, when you can enjoy the triumph of being one of the Geographical Prizemen of the year. I present you, Sir, with this Medal as a token of the warm admiration with which all geographers must regard your past career, and in the hope that it may serve as an incentive to similar exertions in the future."

Mr. R. B. Shaw then replied:—"I feel unable adequately to thank the Society for the high honour they have done me in presenting me this Medal. This is the reward which geographers and explorers hold in encouraging prospect in all parts of the world, during the many hours of tedium and discouragement which they often have to endure. I am glad of this opportunity of publicly expressing my regard for the memory of the lamented Hayward, who was indeed worthy the Medal which was bestowed on him two years ago by this Society; and I deeply regret that this intrepid traveller did not live to receive from the President's lips that praise which would have been accorded to him. He was a worthy agent of the Royal Geographical Society, a Society whose representatives penetrate each year into regions to which no civilized governments have yet sent their agents. In early times it was commerce that prompted the greatest journeys, and public policy has since then opened up large tracts of country; but it is the glory of the Royal Geographical Society, that, without motives of gain or policy, and solely in the interest of science, it carries out explorations which rival those of the missionaries of religion, the great pioneers of geographical discovery. Eastern Turkistan is a conquest of the Royal Geographical Society. Hayward I have already mentioned. Forsyth, Henderson, Cayley, are all distinguished members of the Society. When I left Yarkand for the first time, the Governor of that province parted from me with these words, 'You have opened the door of communication between Turkistan and England, and, please God, it shall never be shut again.' All present will echo that hope, and join me in the wish that Central Asia may be the field in which many more may labour who will be candidates for

these Medals, which constitute the highest honour held out to the ambition of the Geographer."

OTHER AWARDS.

To Commander G. C. Musters, R.N., was awarded a Gold Watch, with a suitable inscription, for his adventurous journey in Patagonia, through 960 miles of latitude, in 780 of which he travelled over a country previously quite unknown to Europeans; for his route map, and for his large contributions to our knowledge of the Patagonian people.

In presenting the Watch to Mr. J. C. Musters on behalf of Commander G. C. Musters, R.N., the PRESIDENT said:—

"In the absence of Commander Musters, who is now travelling in North America, I have great pleasure in handing to you, for transmission to that gentleman, this testimonial of the Society's approval of the courage and ability with which he carried out his wonderful journey through Patagonia. It will be in the memory of most of the frequenters of our Evening Meetings, that an account of this great geographical exploit was read during the previous Session of the Society, since which a more detailed narrative has been published as a book of Travel. The boldness with which Mr. Musters ventured into the heart of this inhospitable country, trusting his life in the hands of savages hitherto spoken of as pre-eminent for their hostility to the white man, and in their company traversing the whole unknown region at the eastern foot of the Cordillera for nearly 1000 miles, could not be passed over by the Council of the Royal Geographical Society without some mark of their approval, such as the present, the more especially as considerable additions have been made to our knowledge of the geography, meteorology, and ethnology of this remarkable country."

Mr. J. C. MUSTERS replied:—"I sincerely regret that my brother, Commander Musters, is not present, to express in person his gratitude for the great honour done him by the Council of the Society. It would be, if possible, a still greater inducement to him to continue his travels and explorations in parts of South America which have hitherto been but little known. I believe he is at the present time travelling in North America, and it is to be hoped that on his return he will be able to add something to our geographical knowledge of that part of the world."

The sum of 25*l.* was awarded to Herr Karl Mauch, in acknow-

ledgment of the ability and zeal with which he has devoted himself, for a series of years, with very limited means, to the exploration of South Eastern Africa; during which he has fixed the position of many places, and traced the course of numerous tributaries of the Limpopo and the Zambesi, besides discovering the South-African gold-fields and ancient ruins in the same region.

The PRESIDENT then presented the sum of 25*l.*, awarded to Herr Karl Mauch; Baron Von Schmidthals, German Secretary of Legation, attending to receive it on his behalf. He said:—

“The Council of the Royal Geographical Society have awarded this sum, as an acknowledgment of the persevering efforts which Herr Karl Mauch has made, during a period of seven years, to extend our knowledge of the interior of South-Eastern Africa. Landing at Natal, almost destitute of means, this enthusiastic and determined explorer has gradually worked his way northward to the almost unknown region lying between the lower courses of the Limpopo and Zambesi rivers—the region of the semi-fabulous places, Monomotapa and Maniça, and the gold-fields of the early Portuguese explorers and writers. In this neglected portion of Africa, lying far to the east of the route of ivory-hunters and travellers, Herr Mauch has succeeded not only in re-discovering the abandoned gold-district whence the Portuguese, and doubtless the Arabs before them, even as far back as the remotest antiquity, derived their East African gold, but has brought to light the ruins of an ancient city, revealing, by the massiveness of its walls and towers and its sculptured stones, the former existence here of a foreign civilized people, long anterior to the arrival of the Portuguese. These explorations have been carried on by Herr Mauch year after year, by repeated attempts and amid many privations; nor has he neglected to fix by exact observations the position of all the more important points, the courses and width of the numerous rivers, and the altitude of the table-lands over which his travels have been chiefly directed, above the level of the sea. I trust, Sir, that in conveying this small mark of our approval to Dr. Petermann, of Gotha, the chief correspondent of Herr Mauch, who will remit it to him, you will express the great interest with which myself and the Council of the Royal Geographical Society watch the career of this meritorious traveller.”

Baron VON SCHMIDTHALS thanked the President and Society in the name of Karl Mauch.

PUBLIC SCHOOLS PRIZE MEDALS.

MR. FRANCIS GALTON (Vice-President, and Chairman of the Public Schools Prizes Committee) made the following statement of results of the Examination for 1872 :—" As Chairman of the Prize Committee, I have the honour to address you on the results of the competition just concluded. I need not touch on matters of detail, as they are contained in the pamphlets which lie on the table.* The distribution, and the names of the successful candidates, have been already announced from the Chair, at the last Meeting of the Society. But I wish to speak on the general results, for they are matters of much satisfaction to all of us. This is the fourth year since the Medals were established. Every year has furnished boys worthy to receive them, and an increasing number of well-prepared candidates yearly enter the lists. During the first two years the candidates who presented themselves were numerous; but, though a few did themselves great credit, our Examiners reported that many did not. Those reports of our Examiners were published, and had a salutary influence in weeding future lists, but of course they had the immediate effect of reducing the gross number of competitors. It was in the lists of last year that this influence was felt: the candidates were few, but nearly all were well prepared. Now, as regards this present year, I have the great pleasure of announcing, that while the average material is at least as good as it was last year, the number of competitors is nearly twice as great. Eleven great schools, all of high eminence, have furnished candidates; and as many as 24 picked boys have competed in Physical Geography, and 14 other boys in Political Geography. I cannot forbear to mention a subject of genuine satisfaction to us,—that Eton has at length joined in the competition, and done so with signal success. I must add that, after so much geographical effort had been called by us into existence, I strongly felt it was a little hard upon the boys who had not gained the very foremost places, but whose absolute merit was such as to earn 'Honourable Mention' from the Examiners, and who therefore had achieved what I may call

* The successful candidates for the year are the following :—

PHYSICAL GEOGRAPHY.—*Gold Medal*—S. E. Spring Rice, Eton College. *Bronze Medal*—A. S. Butler, Liverpool College. *Honourably Mentioned*—C. Penrose, Haileybury College; E. Dickson, Cheltenham College; J. R. White, Liverpool Institute; H. De Vere Vane, Eton College.

POLITICAL GEOGRAPHY.—*Gold Medal*—W. Gershom Collingwood, Liverpool College. *Bronze Medal*—W. C. Graham, Eton College. *Honourably Mentioned*—R. H. Sayle, Uppingham School; W. L. Kingsford, Rossall School; Henry Elliot Dixon, Rossall School.

a 'First Class' in Geography, that they should receive from us no substantial recognition to keep and show, with just pride, now and in after life. I therefore have sincere pleasure in announcing that the Council have agreed, on the present occasion, to award and send a handsome Atlas to each boy, including the Medallists, who has been named with distinction by the Examiners. These Prize Atlases are eleven in number, and their total cost to the Society is about 30*l*. I believe this to be a just and very wise expenditure of our funds, thoroughly in accordance with the objects of the Society, and I hope and believe it will meet with the approbation of the Meeting. The agreeable duty remains to me of calling on the Examiners, Mr. Bates and Mr. Hinchliff, to present the Medallists to our President, to receive from his hands their rewards."

After Mr. F. Galton's Address, the PRESIDENT said :—

"I am sure the Meeting must have listened with interest and pleasure to the observations which have just been addressed to us. To the Council of the Society the facts which Mr. Galton has recorded have afforded unmix'd gratification, for we have laboured long and earnestly to introduce a systematic and scientific study of Geography into the education of the rising generation, and we think that we now see our way to a successful issue. When we commenced our agitation four years ago, Geography in most of the public schools, if taught at all, was taught in such a perfunctory manner that it could not lead to any results. Now, however, we see eleven of the leading schools of the country all sending scholars to compete for our Prizes; and it is reported by the Examiners that no inferiority in regard to the system of instruction pursued in any of these schools can be detected from the Examination Papers. That so many of our great educational establishments should thus have simultaneously introduced an improved system of teaching Geography, amply repays us for our exertions; and we are further gratified by observing that the colleges of Eton and Liverpool stand this year at the head of the list. I do not wish in any way to disparage the schools which have not thought fit to compete, or which, having competed, have not gained prizes, but I cannot the less congratulate Eton and Liverpool on their success. I am especially pleased to see Eton taking the lead, because, as the nursery of our statesmen, the school necessarily exercises an important influence on the fortunes of our country; and because, also, in the traditional head-quarters of the severest Classicism, this introduction into the curriculum, of a popular but most useful element

of education is an enormous stride in advance, and bears the strongest testimony to the enlightened and judicious views of the present head-master, Dr. Hornby. Nor am I less pleased that Liverpool College, the great educational centre for the mercantile classes, on whom our national greatness so largely depends, should have sustained the high reputation it had already gained, and should take the next place to Eton in the competition; and I trust that Dr. Butler will continue to send us scholars, who, in future years, will try the mettle of all comers, and bear off their full share of prizes."

In presenting the GOLD MEDAL for *Physical Geography* to S. E. Spring Rico (Eton), the President said:—"I have much pleasure in presenting to you the Gold Medal which you have gained in the Examination for Physical Geography. You belong, Sir, to a family which has been ennobled for its services to the State, and which is as distinguished for talent and ability as for its devotion to the public interests. I feel assured, Sir, you will not do discredit to your ancestry; I further congratulate you on having been the first to gain for your fine old school, of which all Englishmen are proud, the chief Geographical Prize of the year. I trust you may have many imitators, and that your present success is but an earnest of what Etonians will do in the future."

The GOLD MEDAL for *Political Geography* was then presented to W. G. Collingwood (Liverpool College) by the President, in these words:—"It is highly creditable to you that, having last year gained the Bronze Medal for Physical Geography, you should this year be awarded the Gold Medal for your superiority in Political Geography. Learning the probability of your following the profession of your distinguished father, I am reminded of an observation made by the President of the Royal Academy at our last Anniversary Dinner, that a knowledge of Geography was not less important to Artists than a knowledge of Art to Geographers. Combining as I trust you will, the Artist with the Geographer, you will in each capacity possess the supplemental knowledge recommended by Sir Francis Grant."

On presenting the BRONZE MEDAL for *Physical Geography* to A. S. Butler (Liverpool College), the President said:—"It is only two years ago, Sir, that my predecessor in this Chair presented to your brother our first prize, the Gold Medal for Physical Geography; that you should so soon afterwards have achieved an almost similar success bears the strongest testimony both to your family talents

and to the admirable system of instruction pursued in the Liverpool College. I cannot help observing that the singular concatenation of educational pre-eminence and ability belonging to the Butler family affords an apt illustration of Mr. F. Galton's theory of 'Hereditary Genius.' You are the second Butler, and the sixth scholar educated under a Butler, who has carried off one of our Geographical Medals in the short space of four years, during which we have held examinations. I congratulate you on the honour which you have done both to yourself and to your college."

The President then gave the BRONZE MEDAL for *Political Geography* to W. C. Graham (Eton), and said :—" I am happy to have to present on this occasion a second Medal to an Etonian, and I feel it is all the more creditable to Mr. Spring Rice and to yourself that you have gained this distinction, since you appear to be the two youngest boys in the whole list of competitors. I wish you every success in your future career."

The Hon. G. C. BRODRICK then addressed the Meeting on this subject :—

" It is a subject for special congratulation, that, while the number of candidates this year is very much greater than last, there is no falling off in quality. I cannot help also congratulating this Society, as well as the Head Master of Eton, on the prominent and distinguished position taken by that school; for where Eton takes the lead, no other school need be ashamed to follow. When this competition was originally started, it was a matter of consideration with the Prize Committee whether it should be confined to a small number of schools, or be extended, as it has been, to a large number. I am glad that the latter course was adopted, because it adds greatly to the importance of the Prizes, and enhances the honour of success. An idea had been entertained by some persons, that there might be a certain feeling of exclusive superiority in some of the great schools, which would prevent their coming forward to compete. I have, however, been convinced, from the first, that that is an entire mistake. The present are not days in which a few schools, however eminent, can monopolise to themselves—or even desire to monopolise—any superiority of learning. The older, and what used to be called the great Public Schools, are perfectly willing to meet their junior competitors in the field of contest. They are not ashamed to be sometimes beaten; and when they are

fortunate enough to win, they are all the prouder for their success, because it has been won in open, free conflict. Almost the only difficulty the Committee has had to contend against in extending the range of these Examinations, is a kind of feeling that preparing pupils for these competitions may rather prejudice their success in the usual Classical examinations. I speak from experience when I say that the time expended in preparing for the Geographical examination is by no means wasted, even as regards University Scholarships, or other Classical examinations at Oxford or Cambridge. And not only so, but we must remember that a great change has come over the Public Schools themselves; and they have learnt to recognise the existence of a great many boys who are not destined to succeed in, and have little taste for, Classical studies. These were formerly allowed to remain almost uncared for, and too often very idle; but they are now tempted, by the greater variety of subjects recognised in public school education, to exert themselves, and to acquire some intellectual training. In addition to modern languages, of which the value is generally acknowledged, I believe the study of Geography, as encouraged by the Royal Geographical Society, has been of very great, and will be of very permanent, advantage. I consider the Committee have been very fortunate in their selection of a subject for next year. That of last year had no interest attached to it connected with ancient history; but Eastern and Western Turkistan have been famous, politically and historically, from the earliest ages. Not to go back to the Garden of Eden, though some persons think it was situated not very far from Bokhara, it will be remembered that Western Turkistan was traversed by Alexander the Great in one of his marvellous campaigns after his conquest of Persia. This fact should make people hesitate before they say it is impossible for modern armies to penetrate the fastnesses of the mountain ranges of Central Asia. During the middle ages it was from the same province of Western Turkistan that Genghis Khan and Timour issued forth to found those great Asiatic empires, of which Turkistan always continued to be the nucleus. This province was also, if not the birthplace, at all events the resting-place, of the Turks, who afterwards overran Western Asia, took Constantinople, and penetrated far into Europe. In modern times, likewise, a great interest belongs to this region in consequence of the progress of Russia in Central Asia, whence she is ever pushing forward her frontier eastward and southward towards our own Indian Empire."

A D D R E S S

TO

THE ROYAL GEOGRAPHICAL SOCIETY.

Delivered at the Anniversary Meeting on the 27th May, 1872.

By MAJOR-GENERAL SIR HENRY C. RAWLINSON, K.C.B., ETC.,
PRESIDENT.

GENTLEMEN,

I open my Address by expressing, on behalf of the Royal Geographical Society, our warmest thanks to the Chancellor and Senate of the University of London for their liberality in having permitted us during the past year to hold our Meetings in the noble Theatre where we are now assembled. It has not been by any means as a matter of course that this privilege has been granted us. On the contrary, we must consider ourselves to have been very specially favoured; for the Senate, embarrassed by a multitude of applications from various quarters for leave to hold public meetings in their Hall, were obliged to pass a resolution, restricting its use to meetings connected with educational purposes; and it was merely in consideration of the very high position which we occupy in public estimation and in general utility that we were last year exempted from the operation of this rule, and were permitted to continue to make use of the premises. Let us hope that, as we have certainly not derogated from that high position, either in the numbers and influence of our members, or the high character of our papers, or in the degree of national importance attaching to the objects to which our attention has been directed, the same exceptional favour may be extended to us in future, and we may be allowed to continue our discussion of questions of great popular interest in this Hall.

I have in the next place, Gentlemen, to congratulate you on having at length obtained a substantive footing in this great Metro-

polis. Instead of being mere lodgers, living from hand to mouth and paying our way as we go on, the Fellows of the Royal Geographical Society of London are now the possessors of an unencumbered freehold property in this neighbourhood, which has cost nearly 20,000*l.*, and would at any time realize that amount in the public market. A Committee, presided over by Mr. James Fergusson, was charged by the Council with the duty of preparing the new premises for our reception, and of superintending the removal of our collections from Whitehall Place to Savile Row; and they have discharged their functions in so efficient a manner, that we are now probably more commodiously established than any other scientific body in this Metropolis. Ranged in cases on the floor of our capacious Map-room, which has been formed by covering in the court-yard of the house, and which measures 60 feet in length by 40 in breadth, we have now at our command over 60,000 Maps; and, what is of equal importance, we have ample room to exhibit the maps to all who desire to consult them. As the intention of the Government, in granting us a subsidy of 500*l.* a year, was to provide a Map-office for general reference, it is satisfactory to know that we are thus in a condition to acquit ourselves thoroughly of the responsibilities which the grant imposed on us; and I may add, as an illustration of the extent to which we have already discharged these duties, that, according to a return recently required by Parliament, and which has just been sent in, we find that during the last ten years the rooms of the Royal Geographical Society have been visited by 45,334 persons, and the evening meetings attended by 55,300, making a total of 100,634 persons, who, during the period in question, have derived instruction from our maps, books, and papers. Although we have not hitherto aimed at obtaining the same completeness for our Library as for our Map-room, we are still—thanks to the liberality of many Geographical friends, among whom I would especially notice Mr. Kenneth Murchison, the heir and executor of our late estimable President—in a position to place at the disposal of the Fellows of the Society as large and well-assorted a collection of Geographical works as is to be found in Great Britain. The number of volumes, indeed, ranged along the galleries of our Map-room and in the various apartments of our new premises exceeds 20,000, and as funds become available we intend to fill up the lacunæ in every department, so that our Library may become a real repertory of Geographical science.

OBITUARY.

Our Obituary List for the past year has been unusually heavy, and not in numbers only, but in worth. First and foremost, we have to deplore the death of one to whom the Society was more indebted, perhaps, for its position, both in popular estimation and among the scientific bodies of England, than to all its other members collectively. I need hardly say that I refer to our lato President, Sir RODERICK MURCHISON. It would be out of place, in a mere obituary notice, to attempt to trace in any detail the various incidents of Sir Roderick's long and distinguished career. That career belongs to the pages of our national history, and will moreover receive ample justice at the hands of the tried friend and skilful writer who was appointed by Sir Roderick's will to be his biographer and literary executor. Here it will be more suitable to draw attention to his special merits as a geographer, and to point out his close connexion with this Society.

Sir Roderick belonged to an old Highland family, which, like many others, had been impoverished by its loyalty to the Stuarts. His father, however, retrieved the fortunes of the house by a successful service in India under Warren Hastings, and subsequently purchased a property from the Mackenzies in Ross-shire, where he settled, and where his eldest son, Roderick, was born in 1792. After a rapid course of study at the Durham Grammar School, the Military College at Marlow, and the Edinburgh University, Mr. Murchison joined the army in Portugal in 1808, and pursued his military career to the close of the war, having served in the three actions of Rolica, Vimaira, and Corunna. In 1815, at the suggestion of Sir Humphry Davy, he began to turn his serious attention to physical science. In 1825 he wrote his first geological paper, and from that time forward, for a continuous period of nearly fifty years, he was one of the most assiduous and successful cultivators of geological science that this country has ever seen. To recapitulate his labours in this one department of science would be to fill a volume. He personally examined the geology of not only every district in Great Britain, but of almost every country in Europe, and of some part also of Asia. His discovery of the "Silurian" system made his name famous through the world, and his subsequent exposition of three other systems, to some of which he gave names, the Devonian, Permian, and Laurentian, confirmed and increased his reputation. His papers, indeed, on

these subjects, independently of his great works on *Siluria* and on the geology of *Russia*, are said to exceed 100 in number; and it is no doubt as a geologist—sound, cautious, and eminently practical—that the name of Murchison will descend to posterity. In his later years, however, he took more interest, perhaps, in geography than in geology. He was proud, and justly proud, of the share he took in founding the Royal Geographical Society in 1830. In his Anniversary Address for 1865, he explained to us, in much interesting detail, how he was associated with Mountstuart Elphinstone, John Cam Hobhouse (the late Lord Broughton), and Robert Brown, in drawing up, under the guidance of Sir John Barrow, those laws by which the Royal Geographical Society has ever since been governed; and although his name does not appear in the original lists of Councillors (owing probably to the pre-occupation of his time with geological matters), his claim to the first place in the establishment of the Society was fully recognized and authenticated in the Charter of incorporation which he obtained for the Society from the Crown in 1859. During the latter half of Murchison's life, as has been well said, the history of his connexion with the Royal Geographical Society is in fact the history of the Society itself. He was placed on the Council in 1831, and became a Vice-President in 1836. In 1843 he was first elected President, and he subsequently occupied the Chair at intervals for fifteen years. His tenure of office, indeed, was continuous for the last nine years of his life; the regulation which provides that the President shall be changed every second year having been suspended in his favour, in deference to his extraordinary fitness for the post. But the mere record of our late President's official duties conveys a very inadequate idea of the services which he rendered to the Society. When Murchison, in 1843, was elected to the Chair, we were a struggling body. Our numbers were limited to 650 members, and we had certainly not achieved any high literary or scientific eminence. Murchison's opening Anniversary Address, delivered in May, 1844, was remarkable in many respects. For the first time, with a bold hand and comprehensive grasp of thought, he reviewed the progress of Geography over the whole extent of the globe, and thus furnished a model, which has been followed, with more or less closeness, by all his successors. But this Address, ample in its scope, and admirable for its sound reasoning and extensive knowledge, was also especially memorable from its containing the first allusion to

the Gold Fields of Australia. Murchison, who had then just returned from examining the Ural Mountains, was struck with the close resemblance between their geological formation and that of the great Australian chain, which had been reported on at about the same period by Count Strzelecki; and he accordingly expressed his surprise that the latter region had, as yet, offered no trace of gold or auriferous veins,—the fact being that gold had actually been at that time discovered by the Count in Australia, but that the discovery had been purposely concealed, in deference to the views of Sir George Gipps, the Governor, who feared that society would be disorganized and the fortunes of the infant colony ruined by a sudden rush to the mines of the pastoral and agricultural settlers. The more, however, that Murchison studied the geology of Australia, the more convinced he became that gold must exist there, and in the course, accordingly, of the next few years, he expressed that conviction on three different public occasions: in a Memoir read before the British Association; in a lecture delivered at the British Institution, and finally, in an article in the 'Quarterly Review' for 1850, entitled 'Siberia and California.' The realization of these views was first achieved, as is well known, in 1851, by the practical operations of Mr. Hargreaves; but the delay which thus occurred in opening up the Gold Fields neither impugns Strzelecki's credit as their first discoverer, nor detracts from Murchison's merit in having proved their necessary existence under the guidance of a sound induction. From this time forward Australian Geography occupied much of Murchison's attention, and he was ever ready to co-operate with the colonists in pushing exploration into the interior of the continent. Under his auspices, or at his suggestion, twelve Australian travellers—including Strzelecki, Sturt, Leichhardt, Macdonall Stuart, O'Hara Burke, &c.—received honorary rewards from this Society; and he had the satisfaction, in his last Address, of pointing out that, whereas in 1830 nothing was known of Australia beyond a small area around Sydney, above two-thirds of the continent is now occupied by settlers, and a telegraphic wire has been stretched nearly across from the southern to the northern coast, along a line measuring about 1800 miles.

But Murchison's best known geographical exploits were connected with Arctic exploration on the one hand, and with African discovery on the other. Being in the Chair of the Society when Franklin quitted England in 1845, he took an almost personal interest in the fortunes of the expedition; and when, accordingly, the *Erebus* and *Terror*

were lost sight of, he made it the business of his life to ascertain their fate. He never ceased, indeed, to stimulate public interest in the matter by the most urgent and moving appeals, until at length the mystery was solved by the successful voyage of the *Fox* under Sir Leopold McClintock in 1857. In the same spirit Murchison adopted and made his own the great field of African discovery. Having satisfied himself, at a very early period of his researches, that the interior of the continent was an elevated plateau,—giving rise to great rivers like the Zambesi, the Congo, and the Nile, which flowed to the east, to the west, and to the north, almost from a common centre,—instead of being a mere sandy desert, according to the old and popular belief, he encouraged and assisted to the utmost of his power the various travellers who were prepared by personal observation to investigate and determine this important fact in Physical Geography. Livingstone, Burton, Speke and Grant, Du Chaillu, Beker, and, lastly, Sir S. Baker, all thus, in turn, received Murchison's warmest sympathy and support. It will ever be remembered that, when intelligence reached England in 1867 of Livingstone's death near the Lake Nyassa, Murchison, almost alone, refused to believe the statement, observing, as he did, with equal boldness and acumen, that the Johanna men, on whose authority the statement was made, were especially interested in disseminating a false report. It was on Murchison's urgent requisition that Young's expedition was sent out by the Government to investigate the story on the spot; and our venerable President had his reward in the universal joy and gratitude with which an exposure of the lie was hailed by the British public. Murchison's confidence in the endurance and good fortune of his friend remained unabated to the last; and it is only just to his memory to say that, if the present expedition should succeed in rescuing Livingstone and restoring him to his admiring countrymen, it will be due, not so much to the spontaneous action of the Geographical Council, as to the hopeful spirit and the deep sense of national duty which they derived from the tuition and example of their late noble-hearted President.

Among the more substantial benefits conferred by Murchison on the Geographical Society, must be enumerated, firstly, the valuable assistance which he rendered in obtaining from the Government, in 1854, the grant of an annual subsidy of 500*l.*, on condition that a public map-office was established in the Society's rooms for general reference; and, secondly, the issue of a Royal Charter of incorpora-

tion in 1859, which declared Sir Roderick Impey Murchison, by name, to have been mainly instrumental in establishing the Society, and further provided that he should be "the first President of the said body politic and corporate." The Bellot Testimonial Fund also, which was originated by Murchison, added much to the reputation of the Society, in showing that the geographers of England appreciated true merit wherever it was found, irrespective of national distinction.

But Murchison's services were not confined to the special departments of geology and geography. In assisting to found the British Association in 1830, and in the long course of assiduous care with which he attended its meetings and in his position of Vice-President directed its proceedings, he rendered an important service to the cause of general science. As the Director-General of the Museum of Practical Geology and Chief of the School of Mines, to which posts he was appointed by the Government in 1855, on the death of Sir Henry de la Beche, he had the further opportunity of introducing scientific training into the education of the working classes; and the recent report of the Commission on the coal resources of the country, for which he was mainly responsible, must be regarded as a work of real national value.

It has often been a reproach to the Government of this country that scientific services are, as a rule, so little regarded and so poorly rewarded; but Murchison's career furnished a bright example to the contrary. He was knighted in 1846, was made a K.C.B. in 1863, and a Baronet in 1866. From the other sovereigns of Europe he also received a shower of well-earned honours. By the Emperor of Russia he was made a Knight of the 2nd Class of St. Anne, and subsequently a Grand Cross of the same order, and also of that of St. Stanislaus; and as these honours were conferred for services rendered to the Russian Government, he was graciously permitted to accept them, and wear the crosses and insignia at the British Court. Orders were also conferred upon him by the sovereigns of Sweden, Denmark, Italy, and Brazil. A list, indeed, has been lately published of nineteen stars, crosses, and other emblems of distinction which belonged to Sir Roderick at the time of his decease, and which constitute, as has been said, "the largest number of "honorary decorations which in modern times have been awarded "by crowned heads to any individual for purely scientific attainments."

By the public and scientific bodies of this country and of the Con-

minent he was further rewarded with a similar profusion of titles and honours. He was a D.C.L. of Oxford, LL.D. of Cambridge, and M.A. of Dublin. Of the Royal Society he was not only a Fellow, but also a Vice-President, and had further received from it the Copley Gold Medal. Amongst similar first-class scientific prizes, he had been awarded the Brisbane Gold Medal from Edinburgh, the Prix Cuvier from Paris, and the Wollaston Medal from the Geological Society of London. He was a member of the Academies of St. Petersburg, Berlin, Copenhagen, Brussels, Stockholm, and Turin, and a corresponding member of the Institute of France. At home, at the time of his death, he was Vice-President of the Geographical and Geological Societies, a Trustee of the British Museum, of the Hunterian Museum, and of the British Association for the Advancement of Science, an honorary member of the Royal Society of Edinburgh and of the Royal Irish Academy, President of the Hakluyt Society, Fellow of the Linnean Society and of many other scientific bodies.

It will be further in the recollection of the Fellows, that when Sir Roderick found himself compelled last year, owing to a stroke of paralysis, to retire from the Chair of this Society, which he had then occupied for nine consecutive years—and when it was proposed in consequence, in the Geographical Council, to present him, on his retirement, with some testimonial in acknowledgment of his distinguished services—he caused us to be informed “that he would prefer to any testimonial, however costly and elaborate, the simple gold medal which he had himself so often presented to others as the reward of merit.” This was the last distinction conferred on him by any scientific body; and he assured me that, looking on the Society almost as the child of his creation, he valued our humble tribute of admiration and respect above all the more brilliant trophies which filled his cabinet.

Sir Roderick Murchison, on his retirement from the Army in 1815, was united to the only daughter of the late General Francis Hugonin, and he subsequently passed fifty-four years of married life with this estimable and cultivated lady. He only survived her, indeed, a little more than two years, and was laid beside her in the Brompton Cemetery on October 27, 1871. At Sir Roderick’s funeral the Prime Minister attended in person, and the Geological and Geographical Societies were amply represented.

This is not the place to enter on a critical examination of Sir Roderick Murchison’s character, either as a man or a philosopher;

but I cannot avoid noticing some of those qualities which endeared him to his friends, while they enhanced the value of his public services. Industry and energy, a clear head, a strong will, and great tenacity of purpose, were among his leading characteristics, while his warm feelings, his thorough honesty, his kindness of manner, his entire absence of jealousy, his geniality, fine temper, tact and firmness, peculiarly fitted him to preside over public bodies, and to lead his followers to good and useful ends. Many a young student of science has been led to persevere and succeed by Sir Roderick's encouragement and help. Many a young traveller has been sustained under his hardships by Sir Roderick's hopeful counsel. Sir Roderick, indeed, never deserted a friend in need. At one time he might be seen urging the Government to send out expeditions to search for Franklin; at another he would be energetically defending Governor Eyre, an old medallist of the Society, from what he regarded as persecution. When Speke and Grant were supposed to be in difficulties in Africa, he was active in organizing relief. He was ever a steady supporter of Sir Samuel Baker; and with Livingstone his name is so identified, that when the great traveller returns—as return he assuredly will—the only feeling of regret will be that Sir Roderick will not be here to welcome him.

Sir Roderick died, full of years and honours, on October 22, 1871. His care for his two favourite Societies—the Geographical and Geological—continued to the last; a legacy of 1000*l.* being bequeathed to each of them, to be expended in such manner as the two Councils might consider best for the advancement of their respective sciences. No one is better able than myself to appreciate the heavy loss which the Royal Geographical Society has sustained in the death of Murchison, because no one can more acutely feel my entire inadequacy to supply his place. In the mean time, while I humbly follow, *longo intervallo*, in his footsteps, I can only beg the Society to join with me in doing honour to his memory.

JOHAN AUGUST HAZELIUS, an Honorary Corresponding Member of our Society, was born in Stockhohn on the 18th April, 1797. His father was Johan Hazelius, a wealthy merchant of that city.

He became an officer in the Engineer Corps in 1814, and took part in the short campaign in Norway. He won several prizes in the Academy of Military Science, became a member, and was for 20 years its secretary. He was adjutant to King Oscar for several years; was appointed to a Professorship in the "First Military

School," was made Chief of the Topographical Corps in 1856, and Major-General in 1860. He became a member of the Royal Geographical Society in 1858, and died on the 28th April, 1871.

Hazelius extended his labours in many useful directions. That which fully entitled him to his nomination as member of the Royal Geographical Society was his exertion to continue the publication of the topographical maps of his own extensive country. Since he was appointed Chief of the Topographical Corps an immense number of carefully and tastefully executed maps have been issued, contributing in a great degree to the geographical knowledge of the Scandinavian Peninsula.

He was also prominent as a political writer. He belonged to the Liberal-Conservative party, and, by his calm discussion of complicated questions, delayed the pushing forward by the Liberals of precipitate resolutions, and opposed the tenacious clinging of the Conservatives to old abuses. He exercised for many years a strong influence on the Government of his country by his political writings, and was, at his death, a member of the Upper Chamber of the national representatives.

He was also zealous in his endeavours to improve the instruction given in the national and grammar schools of Sweden. He wrote much on this subject, and was at the time of his death President of the Board of the New Elementary Schools in Stockholm.

His style of writing was subtle, and, at the same time, entertaining; his reasoning clear and convincing, and he preserved the activity and freshness of his mental powers down to a ripe old age.

Captain Jons Wood, late of the Indian Navy, died in London on the 13th November, 1871. He was born in 1812, and educated at the Perth Academy. When very young, Captain Wood joined the Indian Navy, a service fruitful in distinguished names, where his zeal and skill as a surveyor soon brought him prominently forward, and much of his work in this respect remains our standard authority in regard to the countries he mapped.

Captain Wood's name is, however, chiefly associated with the rivers Indus and Oxus. As far back as 1835 he commanded the first steamer that ever floated upon the celebrated waters of the former river; and the maintenance upon it of late years of a fleet of steamers which are employed commercially, and in times of political emergency have more than once done most valuable service, is mainly due to his care and experience.

It is, however, particularly in connection with the Oxus that

John Wood's name is known to fame. In company with Sir Alexander Burnes he proceeded to Cabool on a mission from the Indian Government in 1839, and, leaving his chief there, crossed the Hindu Kush to Kunduz; thence, undeterred by many difficulties, he held his way till he reached one of the sources of the great River Oxus, in the wonderful table-lands of Central Asia, for which brilliant exploit he received the Patron's Medal of our Society in 1842.

Retiring early with a well-earned reputation, Captain Wood visited many of our colonies, leaving his mark for good wherever he remained for any time, and, after a long and honourable career in Sind, the scene of his early usefulness, he returned to Europe last year, hoping to enjoy the repose to which he had long looked forward. Unfortunately, however, a journey to Simla, undertaken before leaving India at the height of the hot season, prostrated him to such an extent that he never fully recovered, and he only survived his return to England fourteen days.

Captain Wood's great characteristic was an extremely retiring disposition, in him amounting to second nature, which often prevented his coming before the world so prominently as his friends desired; but those who had the privilege of his friendship entertained the greatest regard for his character, and the thanks of the Government of India have on several occasions been bestowed on him in testimony of his worth as a public servant. His death was mourned by a wide circle both here and in the East, and, in commenting thereon, the Indian papers remark that no man has died of late years, whose loss has been so much felt in Western India.

It is gratifying to know that a second edition of his work, entitled '*Narrative of a Journey to the Source of the Oxus*,' is about to be published by his son, with an introduction from the pen of Colonel Yule, which will no doubt do justice to Captain Wood's great merits as a discoverer; while it traces the further progress of discovery in the Oxus Valley from his time up to the present day.

GENERAL CHESNEY.—The Society has lost during the past year, in General Francis Rawdon Chesney, one of the most distinguished of its practical geographers, as well as one of its oldest members. His name will be for ever associated with the topography of the Euphrates and Tigris, from his remarkable explorations and surveys of those rivers—enterprises conducted under circumstances of extraordinary difficulty; while by his researches into the conditions of the Red Sea navigation, he was one of the first to demonstrate the

practicability of the overland route to India. It was he, too, who first detected the fallacy propounded by Napoleon's engineers, in assigning different levels to the Mediterranean and Red seas, and first pointed out, long before the project of Lesseps, that a canal without current could be opened through the Isthmus of Suez.

General Chesney was born at Ballyrea, in the North of Ireland, in 1789, and was thus in his eighty-third year when he died. He was educated at the Royal Military Academy, Woolwich, and obtained a commission in the Royal Artillery in 1805. During the Great War he was condemned by the chances of the service to garrison duty, and his first distinction was gained in January, 1814, when he took the foremost part in the rescue of the crews of two vessels wrecked in a storm on the Irish coast, himself plunging into the sea, and bringing off one of the crews to shore, and conveying a cable to the wreck, by which all hands were saved. For this action he received the medal of the *Société des Naufrages*. But he had reached his fortieth year without the opportunity of distinguishing himself in his profession, when, in 1829, the struggle took place on the Danube between Russia and Turkey; and in his desire for active employment, he set out for Constantinople, with the view of offering his services to the weaker side. But the peace, which he found on his arrival in the Dardanelles in process of negotiation between the warring powers, compelled him again to seek a new outlet for his activity. He took the opportunity first of visiting the scenes of the late conflict, and obtaining materials for its history; a work which, however, was not published till long after, when the better-known narrative of Major von Moltke, now the famous Marshal, had already occupied the field. He next visited Egypt, to commence his investigation of the alternative overland routes which had been proposed. He sailed down the Red Sea to Kosseir, and reported the practicability of a steam-voyage in twenty-one days between Suez and Bombay. The Report being despatched to Government, he departed on his first journey to Mesopotamia to examine the Euphrates Valley route. With characteristic energy he declined to wait for the approval of the project of survey he had submitted through Sir Robert Gordon, and embarked in the arduous undertaking without other means than those provided by the assistance of private friends. In these preliminary travels he traversed a large part of Asia Minor, Persia, and Mesopotamia, besides following the course of the Euphrates from El Kaim to Ana. The result of these explorations—conducted under great risks and

difficulties, the voyage on the Euphrates being made on a small raft supported on inflated skins—were embodied in a map and Memoir, forwarded to our Ambassador in Constantinople in June, 1831, describing about 800 miles of the great river. This expedition was conducted at Captain Chesney's own cost; and it was not till eighteen years afterwards that the personal intervention of the late Prince Consort procured the repayment from the Treasury of the actual personal outlay incurred by the explorer. Unfortunately for his fame, the results of these preliminary journeys were not given to the world till late in General Chesney's life, when a volume, commenced in his seventy-seventh year, was published at Government request.

These explorations were followed up by the well-known Euphrates Expedition of 1835,—a task made difficult not only by physical obstacles, but by political opposition, and the imperfect development of the art of constructing steam-vessels. The two exploring vessels—the *Euphrates* and the *Tigris*—were carried in sections from the Mediterranean, at enormous labour, across the desert, put together, and launched on the historic stream. As will be remembered by all, the wreck of the *Tigris*, with the loss of the most important records and instruments, and many valuable lives, was nearly putting a sudden end to the great work Colonel Chesney had undertaken. But the undaunted voyagers held on their way until the *Euphrates* emerged in the Persian Gulf; when the funds sanctioned for the purpose being exhausted, the Expedition was broken up. The commander proceeded alone to Bombay, with the view of seeking aid from the Indian Government for the prosecution of his researches; but failing to receive this, he set out for England, volunteering to take back with him the Indian mails overland. His return journey was made by way of Bussorah and Palmyra. Colonel Chesney, travelling on a camel, and attended only by two Arabs, made the passage of the Arabian Desert in twenty-two days; this alone being an extraordinary feat to perform in the hottest season of the year. From Palmyra he proceeded to England.

An account of this Expedition, the great importance of which has not been duly recognised by the world, owing, it may be supposed, solely to the immediate success of the alternate overland route by Egypt and the Red Sea, was published in the seventh volume of our 'Journal.' Its results are there summed up as follows:—
"Materials for a correct map of a very large portion of Northern Syria were collected; a line of levels was carried across from the

Mediterranean to the Euphrates; Northern Mesopotamia was explored, and the grand survey of the river commenced with the descent of the steamers, and continued to its embouchure in the Persian Gulf. Besides this, two different ascents were made of the Kárûn, and two descents of the Bahamishr. Twice was the River Tigris ascended to a distance of 400 miles beyond its junction with the Euphrates; a second line of levels carried between the Euphrates and the Tigris, and new positions obtained by the journeys across the desert."

The Royal Premium of our Society was awarded to Colonel Chesney for this great work in 1837, and, in delivering it to him, honourable mention was made of the other members of the Expedition, who laboured with great perseverance and rare harmony to carry it to a successful termination. Such were Major Estcourt, Lieutenants Murphy, Lynch, and Cleveland, Mr. Ainsworth, the geologist and naturalist, Mr. Hormuzd Rassam, Dr. and Mr. Staunton, and Lieutenants Cockburn, Eden, Charlewood, and FitzJames.

Colonel Chesney published in 1856, as an introduction to the account of his great expedition, two very elaborate volumes, which have since been regarded as standard authorities on the History and Geography of Western Asia.

General Chesney became a Fellow of our Society in 1838, and was created Honorary D.C.L. of Oxford in 1851. He died on the 1st of February last.

KEITH JOHNSTON, LL.D.—The presentation of the Victoria Medal to Dr. Keith Johnston in person, at our last Anniversary Meeting, must be freshly remembered by the Fellows of the Society. Scarce a month had passed after his reception of this long-coveted distinction and crowning prize of his labours before he succumbed, almost suddenly, to the effects of the unceasing toil of a lifetime. To Dr. Johnston, as he himself stated, and evidently felt deeply, the honour was enhanced by the circumstance of its being conferred upon him at the same time that a similar recognition was made of the great services of our late Chief, with whom he claimed a long-standing friendship; and one of the latest autograph letters penned by Sir Roderick Murchison, written from his sick couch with a trembling hand, was a kindly note of sympathy to the family of his deceased friend.

Alexander Keith Johnston was born at Kirkhill, near Edinburgh, in 1804. His love of geography seems to have manifested itself strongly even at school, and afterwards became the ruling and

entirely absorbing interest of his life. To geographical and other cognate pursuits he became even more devoted as he advanced in life, scarcely ever diverging to take an active part in public affairs, or to engage in political matters. His life was thus one of quiet but incessant industry, as such offering little of personal incident.

The long list of his more notable geographical works was fully given in Sir Bartle Frere's address on the presentation of the medal. His masterpiece—the 'Physical Atlas of Natural Phenomena'—will ever mark a most important epoch in the geographical history of this country, as giving the date of the introduction to it of that most interesting branch of our science—Physical Geography. Carried out at great personal sacrifice, this work brought Keith Johnston well-merited distinctions, not only from the scientific world of this country, but in the form of honorary memberships of kindred Societies in Paris, Berlin, Vienna, Petersburg, and Bombay. Baron von Humboldt, in sending his portrait to Keith Johnston, wrote beneath it in French, "I am glad to take this opportunity to thank you for all you have done for Physical Geography." The late Sir John Herschel acknowledged his indebtedness to the Physical Atlas for great part of his information, in writing on this branch of geography; and, undoubtedly, the volume has been, and is still, the basis of the whole English literature of this subject.

It is generally admitted that Keith Johnston did more to popularize the study of geography than any previous author, and his minor works have made his name a household word throughout Britain. His own country is specially indebted to him in various ways. In 1851, in a memoir read before the Royal Society of Edinburgh, Keith Johnston drew public attention to the Ordnance Survey of Scotland, which, up to that time, appears to have suffered almost complete neglect; and to the agitation in this matter which followed, in which Sir Roderick Murchison took a strong and active interest, Scotland is indebted for the progress which has since been made in this most important public work.

Dr. Johnston was one of the originators of the Scottish Meteorological Society, the early meetings of which were held in his house; and to his earnest working in its behalf as its Honorary Secretary, as well as to the broad spirit in which he prosecuted the science of Meteorology, that Society is indebted in no inconsiderable degree for the wide reputation it enjoys.

During the later years of his life his mind was more specially directed to the subject of educational geography; his endeavour

being, after correspondence with very many of the more eminent teachers of geography throughout the kingdom, to reconeile, if possible, into one best system, the many varied methods of geographical instruction which are at present adopted, and to prepare appliances suited to such a plan. His most ardent hope was to sow the seeds of a greater respect for geographical knowledge in Britain, out of which might grow the position due to it as an essential branch of liberal education in higher schools, such as it has long held in the universities of the Continent, notably of Germany.

Dr. Johnston's personal character was marked by a singular simplicity and candour, thorough benevolence, and unselfish generosity. Most enthusiastic in his love for and pursuit of his profession, and its absorbing studies, he was yet more readily accessible to any one seeking his advice or assistance.

CAPTAIN JAMES PALLADIE BASEVI, of the Royal (late Bengal) Engineers, Deputy-Superintendent of the Great Trigonometrical Survey of India, was born on the 23rd of February, 1832. His father was the celebrated architect, George Basevi, who designed the Fitzwilliam Museum at Cambridge, the Conservative Club in London, and various other important buildings, and who lost his life by falling from the tower of Ely Cathedral.

After passing with great credit through Rugby School and the Cheltenham College, James Basevi obtained a cadetship in the Honourable East India Company's Military Seminary at Addiscombe, where he rose to be the first cadet of his term, and thus won for himself a commission in the Corps of Engineers of the Bengal Presidency. He went to India in 1853, and was appointed an assistant in the Great Trigonometrical Survey of India, on the 18th January, 1856. From that time until the end of his life he continued to serve in the latter department, which he had been induced to select from a preference for its duties over those of any other branch of the public service in India which was open to him; and his natural abilities, great energy, and persistent self-devotion, soon established him in the position of one of the most able and reliable officers of the Department.

He took a prominent part in each of the various branches of the operations. In 1856-7, he assisted in the principal triangulation of the Valley of the Indus, and on the termination of the field season in the plains—which is contemporaneous with the commencement of the season for field operations in the higher Himalayas—he was transferred to assist in the survey of Kashmir, on which

he was employed during the eventful summer of 1857, when the mutiny of the Bengal Army took place, and his countrymen were engaged in a desperate struggle, not only for the maintenance of the British power in India, but for their very existence. From motives of policy, it was not considered desirable to suspend the operations of the Himalayan surveyors before the time when they would be naturally terminated by the close of the season for field operations. Thus, when the surveyors returned to the plains, Delhi had again fallen into the hands of the British, and the crisis of the insurrection was over.

By the end of the field season of 1859-60, Captain Basevi had carried the principal triangulation of the Indus down to the neighbourhood of Mittenkoto, at the junction of the Indus and the Sutlej rivers, and was on his way back to recess quarters, when he was directed to join the expedition, which was sent under General Sir Noville Chamberlain, K.C.B., into the hills among the northern offshoots of the Soolimani Range, to punish the tribe of Mahsood Wuzeeris for repeated inroads and aggressions; he assisted in making a valuable military reconnaissance of the country, and executed a continuous and unbroken traverse of the line of march which was the basis of the survey. In the year 1860 he was transferred from the Valley of the Indus to the east coast of the peninsula, to carry on the principal triangulation which was to connect Madras with Calcutta, and which had then reached the vicinity of Vizagapatam. In two field seasons he carried this chain of triangles 180 miles southwards, into the district of Guntoor, when he was recalled to Vizagapatam to make arrangements for, and assist in, the measurement of one of the great Indian base-lines with the well-known Colby apparatus of compensation-bars and microscopes. This base-line being completed before the termination of the field season, Captain Basevi was employed during the remainder of the season (1862-63) in making a reconnaissance—partly for geographical purposes, and partly for the requirements of the survey—of the native states of Jeypore and Bustar, which, though lying in the vicinity of the British stations of Vizagapatam and Vizianagram, and of the main lines of communication between Calcutta and Madras, had up to that time been unsurveyed, and were almost unknown, appearing as a great blank on the latest and best maps of the Madras Presidency. Covered with dense malarious forests, which swarm with tigers, the deadly reputation of this region appears to have been a bar, alike to the explorations

of the curious and scientific, and to the visits of sportsmen. Captain Basevi carried a continuous traverse from his point of departure (in the Vizagapatam district) over the Galikonda hills to Jeypore, and thence to Badrachellum, on the River Godavery, which was his terminal point. He and his assistant, and all the native followers, suffered more or less from fever, but may be considered to have escaped with comparative impunity; for it was in carrying a triangulation through these regions that Colonel Everest suffered so severely in 1819, when "he and his assistants, and the entire native establishment, were struck down by a malignant fever, many perished miserably by the roadside, and the survivors had to be carried into Hyderabad, whence the whole of the public elephants, litters and vehicles of all descriptions, had to be despatched to their succour on the receipt of the first intelligence of the calamity." * Captain Basevi succeeded in making a good preliminary map of Jeypore, which was subsequently published; and he furnished an excellent report, giving a general description of the country, and details of the route-survey, and of the astronomical determinations of latitude and longitude by which it was checked from time to time.†

In 1864 Captain Basevi was in England on leave of absence, when preparations were being made for the pendulum operations which were to be carried out in India, at the recommendation of the President and Council of the Royal Society. It was proposed that two pendulums, the property of the Royal Society, one of which had been swung by General Sabine in his celebrated operations at several stations, extending from the Equator to the Arctic Ocean, should be taken out to India, and swung at some of the stations of the great meridional arc of triangles which extends from Cape Comorin to the Himalayan Mountains, and was measured by Colonels Lambton and Everest. Up to that time pendulum observations had been mostly made at stations on islands and coasts, and not in the interior of continents: thus further observations were needed to ascertain to what extent the results might be affected by differences in the conditions of the earth's crust under continents as compared with oceans. * By the combination of pendulum observations with the astronomical and geodetic measurements

* See 'Account of the Operations of the Great Trigonometrical Survey of India by Colonel Walker,' vol. i. p. xxxi.

† See 'Report of the Operations of the Great Trigonometrical Survey of India during 1862-63,' by Colonel Walker. With Appendix by Captain Basevi.

of the Indian Survey, a very favourable opportunity would be presented for acquiring information of great value towards the solution of many problems of high scientific interest. Such an undertaking was precisely one for which Captain Basevi was admirably well qualified: for, while ever ready to throw himself into any work which he might be called on to perform, his bent of mind and habits of study led him to feel a preference for the more purely scientific branches of the operations of the Trigonometrical Survey.

He commenced operations in 1865, at Dehra Doon, the headquarters of the Trigonometrical Survey Department, which is situated in long. 78° E., in a valley at the foot of the southern slopes of the Himalayan Mountains. By the spring of 1871 the operations in India had been nearly completed; all that was wanting was for the pendulums to be swung on the high table-lands in the interior of the Himalayas, where altitudes exceeding 15,000 feet might be attained in localities suitable for the operations. The pendulums were then to be taken back to England, and swung *en route* at Aden and in Egypt, which would have afforded two very interesting comparative determinations of gravity. They were to be swung finally at the Kew Observatory, the base station of the operations, where they had been swung immediately before being taken out to India.

Thus Captain Basevi's programme was fast approaching completion, and he was eagerly looking forward to a speedy return to his native land, with the gratification of having successfully accomplished an arduous and difficult series of operations. But the most difficult portion of the work—the operations in the higher Himalayas—had still to be accomplished; and these caused him to be exposed to severe privations, in a barren and desolate region almost wholly devoid of the necessities of life, exceedingly elevated, and, consequently, having a highly-rarified atmosphere, in which breathing is difficult and the slightest exertion very fatiguing. The weather, too, happened to be very inclement, and Captain Basevi was exposed to great extremes of cold and heat, and to frequent rains and heavy snow-storms while on the line of march. He completed a very satisfactory series of observations at Moré (lat. $33^{\circ} 16'$ N., long. $77^{\circ} 54'$ E.), at an altitude of 15,500 feet, and was commencing a final series of observations on the table-lands at the eastern extremity of the Changchenmo Valley, in lat. $34^{\circ} 10'$ N., long. $79^{\circ} 25'$ E. elevation 17,100 feet, when a bronchial disorder, from which he had recently begun to suffer, suddenly became greatly

aggravated, and caused his death, which took place on the morning of the 17th July. No Europeans were with him at the time, nor any medical man within hundreds of miles; but his native servants and attendants seem to have been attentive and well behaved, and to have done all they possibly could for him. To the last he was in full possession of his faculties, but, apparently, quite unaware of his danger; in fact, his death occurred very suddenly, just after he had risen from bed, at daybreak, and was dressing to go on with his work,—the extreme cold probably causing congestion of the lungs.

It is usual to look upon British India as one country; and it is somewhat difficult to realise the fact that, within the limits of our Indian empire, every variety of climate is presented, from that of extreme tropical heat in Central and Southern Asia, to that of extreme Arctic cold in the highly-elevated plateaux of the Himalayan ranges. To all these vicissitudes of climate Captain Basevi was exposed, in the course of his pendulum observations; and he has clearly fallen a victim to his work, with, probably, a far greater persistency of devotion than if he had died as a soldier on the battle-field: it would be difficult to find his equal in habitual forgetfulness of self and devotion to duty.

He has left a widow and two sons; who, it is to be hoped, will not be altogether forgotten by the country to whose service his life, up to the very last, was so unreservedly dedicated.

Dr. BERTHOLD SEEMANN, the well-known traveller and botanist, died at the Javali Gold-mines in Nicaragua, in which establishment he held an important appointment, on the 10th of October last, at the early age of 47 years. He was a Hanoverian by birth, having been born in the city of Hanover in 1825. After receiving an excellent education in the Lyceum of his native place, he spent some time in studying his favourite science in the Botanic Garden at Göttingen, at which University he also completed his general education, and received the diploma of Phil. Dr. Soon afterwards, having attained his 20th year, he came to England and obtained the appointment of Naturalist on board the *Herald*, in which capacity he made a voyage round the world and three cruises to the Arctic regions in search of Sir John Franklin. The history of the voyage was afterwards published by him, in 1853, under the title of 'Narrative of the Voyage of H.M.S. *Herald*, 1845–51, under the Command of Capt. Henry Kellett;' and he also wrote an account of the botanical results of the same, which was published

in 1857. In 1855 'A Popular History of Palms' issued from his pen. During these years he resided chiefly in his native city, where he founded and edited a botanical journal, the 'Bonplandia.' In 1861 was published an English translation, which he had previously prepared, of Von Kittlitz's 'Views of the Vegetation of the Coasts and Islands of the Pacific,' in which the general aspect or physiognomy of vegetation in various regions and latitudes was attempted to be displayed in a series of tableaux, pictorial and descriptive. Shortly before the date of this work, in 1860, he was appointed member of the Commission sent out by the Government to the Fiji Islands, with the object of ascertaining the advisability of accepting the cession of the group as a British colony. The results of the journey were published in 1862, in a popular form, under the title of 'Viti; an Account of a Government Mission to the Fijian Islands.' The botanical collections made during his visit were described in a beautiful serial work, the 'Flora Vitiensis,' published by private subscription between the years 1865 and 1868.

His voyage to the Fiji Islands was by no means the last of his undertakings, for since then he made several visits to Central America, on special missions connected with mines and other commercial undertakings, during which he always found means to continue his botanical studies and researches. He was a man of prodigious industry, finding time in the intervals of his travels and greater works, to edit a botanical journal; first the 'Bonplandia,' from 1853 to 1862, and afterwards the 'Journal of Botany,' from 1863 to the epoch of his last departure for his more permanent residence in Nicaragua; and he was also a frequent contributor to English and German periodical literature. He was a member of our Society since the year 1862.

JOHN MARKHAM was born at Leghorn, on April 1st, 1835. His father, Captain J. Markham, R.N., was son of William Markham, Esq., of Becca Hall, in Yorkshire, and grandson of Dr. William Markham, Archbishop of York.

In 1852 John Markham was appointed, by Lord Malmesbury, to a Student Interpretership in China. In February, 1853, he became Acting Assistant at Canton; in April, 1854, Assistant at Foo-choo; in October, 1856, Second Assistant in the Superintendency at Hong-Kong; and on June 16th, 1857, he was appointed First Assistant at Bangkok, in Siam. On December 22nd, 1858, he became Vice-Consul at Shanghai, and on January 30th, 1863, Consul at Chefu.

In 1870 he was appointed to officiate as Consul at Shanghai, during the absence of Mr. Medhurst, and he died there on the 9th of October, 1871.

"An able and energetic Consul, a courteous and kindly chief, a most popular and genial man, Mr. John Markham had earned high respect as an official, and the warm regard of all who had personal intercourse with him. Possessing strong common sense, and much energy and decision of character, Mr. Markham filled with credit the various posts to which he had been nominated, and, just before his death, he was identified with the greatest advantage that has been gained for foreign intercourse with China, since the treaty of Tientsin. It is due primarily to his energy, in contesting the restrictive measures attempted by the Shanghai Taotai, that the transit-dues clause of the treaty of Tientsin has at length been given its broad and true interpretation by the Peking Government. Always accessible and courteous, and always ready to forward any public enterprise, whether in his official or private capacity, Mr. Markham earned for himself a popularity which will not be readily forgotten."—*North China Daily News*, Oct. 10th, 1871.

The English community in China have marked their sense of the loss they have sustained in the death of Consul Markham, by generously subscribing, for the benefit of his widow, the sum of 15,000 taels.

Mr. Markham was elected a Fellow of the Royal Geographical Society in 1870, and he read a paper on a journey he made through the province of Shantung, which was published in our 'Journal' for that year. It contains a very interesting account of the tomb of Confucius, and much valuable information respecting the products and capabilities of that important province. Mr. Markham has left behind him a large quantity of manuscript notes relating to the trade and history of China, and to the Taeping rebellion.

He was married at Hong-Kong, on February 16th, 1858, to Miss Caroline Rickett, who, with two young daughters, survives him.

GEORGE GROTE.—Although this eminent historian, one of the chief literary ornaments of our country, was not known to the world either as a traveller or geographer, his death cannot be here recorded without some notice of his career. The Society was proud to have his name enrolled as one of its Fellows, he having shown his appreciation of our labours by joining our body in the year 1858. He may be said to have been further connected with us from his position as Vice-Chancellor of the University of London, in which capacity

he always favoured our annual application for permission to hold our meetings in the Hall of the University—first, during a series of years, in the Old Burlington House, and afterwards in the magnificent building in which we are now assembled.

It is not necessary here to narrate the incidents of Mr. Grote's career, which are well known and have been more fully recorded in other publications; but it may be necessary to remind our associates that he was born in 1794, at Beckenham, in Kent, the son of a London banker, and that on completing his education at the Charter-house, after a short trial in his father's business, he abandoned commercial pursuits for those, first, of politics, and afterwards of literature. It was in 1841 that, wearied with the want of sympathy which the Reformed Parliament showed for his philosophical Radicalism, he retired from the representation of the City of London and applied himself with concentrated energy to his 'History.' The first volume of his great work appeared in 1846, and the termination was reached in 1855. It was received with universal applause, and in Germany was even more enthusiastically welcomed than at home. So great, indeed, was its reputation, that, long before the successive volumes appeared, we find the great Niebuhr recommending a friend, to whom he had given a letter of introduction to Grote, to secure, if possible, proof sheets in advance of publication, in order that he might translate them into his own language.

Mr. Grote was the champion of the London University long before it had won that elevated place in public opinion which it now holds for the searching nature of its examinations, its direct representation in Parliament, and the large influential body of its graduates. From first to last he was the presiding genius over this liberal educational institution. On him, in its earlier years, devolved the greater part of the labour of managing its affairs. He was always ready to draw up its reports with his own hand, and to strengthen it with his countenance and advice. He was also an indefatigable worker in the public service as a Trustee of the British Museum, never sparing himself, even when his health failed, for the sake of that noble institution.

He was a member of the French Institute and of many other foreign and home Academies and Societies. He died of a lingering illness on the 18th of June, 1871, and was interred in Westminster Abbey on the 24th of the same month.

The Earl of ELLENBOROUGH.—The late Earl became a Fellow of our Society in 1845, on his return from India, after his stirring and

brilliant three years' administration as Governor-General of our Eastern Empire. He distinguished himself, as we all know, in after years, as a most effective speaker in the House of Lords, but, as far as I am aware, did not leave any memorial of his abilities as a writer. As the son of the celebrated Chief Justice of the Court of King's Bench in the reign of George III., life opened with brilliant prospects for the late Earl. He was born in 1790, and received his education at Eton and Cambridge, and obtained his degree of M.A. in 1809.

I cannot close this brief notice of Lord Ellenborough's career, without placing on record my deep personal acknowledgments to him for having, at my own special request, transferred my services after the Afghan War to the remote country of Turkish Arabia, and thus enabled me to pursue those researches into the early history and geography of Western Asia which have proved of so much public interest, and which have, in fact, led to my being in the position that I now occupy as your President.

Mr. JAMES CHAPMAN, a South African traveller, much esteemed in Cape Colony, where he had been for many years a resident, died at Du Toit's Pan, in the Diamond Fields, on the 6th of February last. For many years he was employed as ivory trader in the interior, and displayed great courage and enterprise in undertaking distant journeys; in one of which, to the Victoria Falls of the Zambesi, he was accompanied by the well-known traveller Mr. Thomas Baines. Mr. Chapman published, in London, an account of his journeys in 1868, under the title of 'Travels in the Interior of South Africa.' He was enrolled a Fellow of our Society in 1867.

Mr. JOHN POWER, C.E., the Proprietor and Editor of the 'Panama Star and Herald,' and a gentleman of high literary attainments, died on the 13th of May last, in the fifty-first year of his age. He was born at Yonghal, in Ireland, and was for many years resident in Central America, taking an active part in all that tended to develop the resources and add to our knowledge of that country. Failing health, brought on by incessant labour, compelled him to return to England, where he busied himself up to the time of his death in collecting material on his favourite subject, the History and Material Progress of Central America and the adjoining countries. He was the author of a 'Description of the Province of Sancto Domingo del Darien in 1754, translated from the original in the National Archives of Bogotá,' published in 1868, and of other

smaller works, and was a Fellow of our Society since the year 1854.

Mr. WALTER COPE was known for many years, in his position as our diplomatic representative in the Republic of Ecuador, as the generous and enlightened supporter of all scientific travellers in that most interesting part of South America. His residence in that country extended over the years from 1827, when he was appointed Consul at Guayaquil, to 1861, when he retired, having served during the last seven years as *Chargé d'Affaires*. He died at his residence near London on the 15th of December last, having reached the advanced age of upwards of 90 years.

The Society has also to regret the loss by death of Commander A. G. GLASCOTT, R.N., who, by his topographical work, as member of the Turko-Persian Frontier Survey, rendered eminent service to geography, and of Captain DAVID J. NASMYTH, of the great Trigonometrical Survey of India.

Other Fellows, whose loss during the past year we have to deplore, are the following, many of whom distinguished themselves in various other walks of life, although not known to the world as geographers or travellers:—Sir Thomas Dyke Acland, Sir Peregrino P. F. P. Acland, Bart., Mr. J. H. Buchan, Mr. R. B. Byass, Mr. C. Buxton, M.P., Mr. Richard Bentley (the well-known publisher), Mr. W. Balfour, Mr. D. R. Blaine, Mr. E. L. Betts, Rev. C. J. Fynes Clinton, the Earl of Dunraven, Mr. C. Faulkner, Rev. C. Forster, Mr. D. A. Freeman, Mr. R. J. Garden, Mr. R. Henderson, Mr. R. Honeywood, Mr. A. Laybourne, Mr. J. Levick, Captain G. F. Lamert, Mr. J. Monteith, Mr. Thomas Ogilvy, Sir Thomas Phillips, Bart., Admiral W. Ramsay, Mr. J. Somes, Sir J. York Scarlett, Mr. W. J. Spencer-Bell, Mr. P. Sharp, Mr. F. F. Searle, Mr. A. W. Tooke, and Mr. W. Young.

ADMIRALTY SURVEYS.*

The surveying operations which have been carried out at home and abroad by H.M. ships during the past year, may be briefly described as follows:—

Upon the East Coast of England, the *Porcupine*, under Staff-Capt. E. K. Calver, with three assistants, has been engaged during the

* By the Hydrographer, Rear-Admiral G. H. Richards, C.B., F.R.S.

greater part of the season in re-surveying the Lynn Wash, the most considerable indentation upon that coast, and comprising within the area re-examined upwards of 450 square miles.

Since the former survey by Captain Howett in 1828 many changes have taken place in the coast-line of this estuary, principally from its being the depository of the waste which is slowly, but continually, in operation on the shores to the north as far as Scarborough Head; numerous embankments have been formed, especially towards the head of the inlet, to enclose and retain the new lands thus formed, and in some parts the coast-line has assumed entirely new features, principally in Boston Deep and towards Lynn,—the latter due to an artificial diversion of the former sea-channel between the Deep and the town. The outer portions of the navigation have but little changed since the survey of 1828. This new chart, being ready for the engraver, will shortly be published.

During a few weeks in the middle of the season the *Porcupine* was employed in making a minute examination of the coast between the Thames and the Tay, and in examining the nautical works in progress at the principal seaports.

On the West Coast of England, Staff-Commander J. Richards, with his two assistants, has been chiefly employed in making a new survey of Morecambe Bay, the sands of which had undergone great changes since the last Admiralty Survey by Capt. Denham in 1845. The Grange Channels near the middle of the Bay, which at that date were two distinct passages, are now merged in one, of proportionally greater and deeper dimensions, to the benefit of navigation generally, and especially so to the neighbouring town of Morecambe. The alterations in the banks near Fleetwood and Peel harbours, although important, are not so considerable; nevertheless, the new chart, when published, will be welcomed by those interested in the prosperity of the rapidly rising manufacturing town of Barrow-in-Furness, as well as of Fleetwood, Morecambe, and Lancaster.

During a part of the season the *Lightning* was employed in making a preliminary examination of the banks off the south-east coast of Ireland, which were reported to have undergone changes. The Arklow and Blackwater banks were found to have grown out in elbow-like forms for a distance of about two cables' length to the south-east, and to have become shoaler at those parts. The swatchways, or channels across the banks, had also nearly filled up.

Holdens Bed had shifted nearly half a mile to the eastward of its former position on the chart, thus improving the channel into Wexford South Bay.

It is hoped that a new survey of these localities will be made during the present year.

The Admiralty Survey of Portsmouth continues to be carried on with a steam-launch and a small party under Staff-Commander D. Hall and one assistant; during the past season a survey of Southampton Water has been commenced on a large scale, which has long been required, and is to include the Bramble Bank. This Bank, since the survey of 1845, has extended to the northward, narrowing the channel to Southampton, and necessitating the placing of another buoy for the safety of its navigation.

Staff-Commander Hall has also been charged with the general direction and supervision of the dredging operations for the deepening of the channel into Portsmouth Harbour, with the view to the maintenance of a straight passage with an uniform depth of 20 feet of water at ordinary low spring-tides.

The Surveys in the Mediterranean and Red Seas, which, since the opening of the Suez Canal, have been combined, are under the direction of Captain G. S. Nares, in *H.M.S. Shearwater*.

A complete re-survey of the Gulf of Suez was commenced in the winter of 1870, and, by dint of great exertion on the part of Capt. Nares and his officers, it has just been completed, as far south on the African shore of the Red Sea as Cosire and the Brothers Islands. A re-survey of Port Said and its approach has been made each year since the opening of the Canal, in order to ascertain whether any change in the depth is taking place likely to affect navigation, and the *Shearwater* is at present engaged on this work. No delay will take place in the publication of the new survey of the Gulf of Suez.

In connection with the *Shearwater's* labours, it may be mentioned that a short time was spent during the autumn of 1871 in pursuing the investigations of the currents in the Strait of Gibraltar, which were commenced in the *Porcupine* in 1870, under the auspices of Dr. Carpenter, F.R.S., and Captain Calver. Upon this latter occasion Dr. Carpenter again volunteered his services, and accompanied Captain Nares in the *Shearwater* to the Mediterranean.

The observations which were made by these gentlemen, and the results obtained, were interesting in a scientific point of view, and will prove practically useful to navigation. The public will, no

doubt, be in possession of them from the able pen of Dr. Carpenter himself at an early date; in the mean time a paper from Captain Nares has appeared in the 'Proceedings of the Royal Society,' and has been published in greater detail in a separate pamphlet by the Admiralty. It is sufficient here to state that the well-known Gibraltar current running into the Mediterranean was proved to be superficial, and that, below, the movement of the water was found to be tidal,—the eastern-going surface-stream being modified in its strength, and even turned to the westward during east winds or calms. We shall have occasion to return to the question of Ocean Circulation before concluding this brief report.

The West India Survey is carried on in a small hired vessel by Staff-Commander George Stanley and two assistants.

For the twelve months between July, 1870 and 1871, they were employed on the coast of British Guiana, during which time 4000 linear miles of soundings and 90 miles of the low monotonous coast-line of the colony were completed, under considerable difficulties owing to the nature of the climate, light variable winds and strong currents, and the fact of the vessel being without steam-power. The approach to Demerara, however, has, through the labour of the surveyors, been made clear to the navigator, the depth and nature of the bottom being distinctly charted for a considerable distance to seaward. The results of this survey are in course of preparation for publication.

The West India Survey is, for the present, removed to the Island of Dominica.

The Cape of Good Hope Survey is carried on chiefly by shore-parties, assisted occasionally by boats, and by one of the cruisers on the station when one can be spared. Navigating-Lieutenant Archdeacon is in charge, and has one assistant. Notwithstanding serious difficulties of various kinds which they have had to encounter, good progress has been made with the triangulation and survey of the coast-line; no less than 250 miles having been completed, or from the Bashee River to Point Morley, the northern boundary of the British possessions on the East Coast of South Africa. During the first half of this journey the party had to pass through the country of unfriendly Kaffir tribes, and, owing to the not over-successful negotiations of the Cape Town Government, who had undertaken to make the necessary arrangements for their safe conduct, they found themselves, on more than one occasion, in considerable peril; and, in the neighbourhood of St. John's River, were

compulsorily detained by the Chief of the Ponda tribe for a period of seven weeks, and were only permitted to proceed after the energetic interference of the Natal authorities, to whom Mr. Archdeacon had succeeded in communicating his uncomfortable position.

During the last three years of the progress of this survey, the party have undergone extreme privations, and have worked with unremitting energy; and it is a source of satisfaction that nothing now remains but to complete the soundings, which will be done by Mr. Archdeacon's naval assistant, so soon as the Commodore on the station can afford him the necessary help of a ship for the purpose.

Mr. Archdeacon himself will shortly proceed to a new field of labour on the coast of Western Australia, whose energetic Governor, Mr. Weld, has promised the funds necessary to commence a work of so much importance to that colony, and which will be supplemented by an equal sum from the Imperial Government.

Newfoundland Survey.—Staff-Commander J. H. Kerr, with his two assistants, has, during the past year, surveyed 300 miles of coast-line, with 280 square miles of soundings, in Bona Vista Bay. The comparative absence of fog, and an unusually fine season, have enabled this material progress to be made upon a coast which generally presents more than ordinary difficulties to the surveyor. The eastern shores of Newfoundland are now completed as far as Poulinquet Island in Notre Dame Bay, or to $49\frac{1}{2}^{\circ}$ of N. lat. and $54\frac{1}{2}^{\circ}$ of W. long., an examination which was greatly needed, owing to the numerous shoals and reefs with which this coast abounds. The survey will now be prosecuted along the south coasts of the island. Most of the existing charts of this part of Newfoundland were executed by Captain Cook a century ago, and although, of course, generally accurate, are necessarily entirely deficient in those details which are essential to navigation in the present day.

South Australia.—In January, 1871, the surveying party on this coast, under Staff-Commander Howard, proceeded in their hired schooner, the *Beatrice*, to the south-eastern part of the colony, where they were engaged in sounding the coast surveyed on a previous occasion, until the latter part of June, when, having completed their work to the distance of 8 miles off shore, which is as far as it can be seen from a small vessel's deck, they returned to Adelaide. The whole of the eastern coast of the colony having been completed, their attention was devoted to the western shore of Spencer's Gulf, about 150 miles of which remained unsurveyed. By January, 1872, nearly 60 miles was accomplished, including the lagoon-like

opening known as Franklin Harbour, in the upper part of the Gulf; the greater part of the soundings have also been obtained. and it is hoped that the survey of Spencer's Gulf will be completed by the middle of the present year.

Victoria, Australia.—The survey of this coast from Cape Otway to Cape Howe, the boundary between Victoria and New South Wales, has now been completed, and the party under Navigating-Lieutenant H. J. Stanley, have latterly been employed on the exposed coast westward of the former cape, about 70 miles of which has been surveyed. The total amount which has been completed during the past year is about 120 miles, almost all of which had to be carried on by parties on land. The difficulties at times were very great, owing to the precipitous nature of the shores, and the dense character of the brushwood; and on one occasion, a party of five men were for several days cutting a footpath, less than a mile in length, through a country never before trodden by man. In addition to the coast-survey, 1600 square miles of soundings have been taken in a small river-steamer, where it was necessary closely to watch every change of weather, in order to ensure reaching shelter.

The Survey of Victoria is now drawing near its close; but King Island, at the western approach to Bass Strait, has not yet been closely examined. It belongs to the neighbouring colony of Tasmania; but, in regard to the safety of navigation, it is of equal importance to the Australian colonies, and it would be a cause for regret if the survey were withdrawn before the approach to Bass Strait was accurately surveyed and sounded.

New South Wales.—As noticed in former Reports, the sea-board of this colony has been thoroughly surveyed, but the Admiralty Surveyor, Navigating-Lieutenant Gowland, has, by permission of the Admiralty, been retained in New South Wales entirely at the expense of the colony, for the examination of its interior waters.

The Richmond and Hunter rivers have been carefully sounded, on large scales, as far as the head of ocean navigation, which, in the former, is available for vessels of 10 feet draught as high as 60 miles, and the latter for as high as 40 miles, or to the town of Morpeth. These rivers are rapidly becoming settled, and their banks peopled.

Queensland.—The principal work accomplished during the past season by Staff-Commander Bedwell, on the coast of Queensland, has been the survey of Port Curtis on a large scale, which has occupied a considerable time, owing to the numerous inlets which

empty themselves into the port, and which it has been necessary to trace and examine. Many of the shoals appear to have changed considerably since the survey of 1847. The outer coasts of Facing and Curtis Islands, which form the port on its eastern and northern sides, have been surveyed from East Point to Cape Capricorn, and the approach has been thoroughly sounded from a distance of 10 to 12 miles off shore.

North China and Japan.—This survey, under Commander H. C. St. John, is carried on in H.M.S. *Sylvia*; and during the past year it has been confined entirely to Japan. Yezo, the northern island of the group, hitherto very imperfectly known, and erroneously laid down on our charts, has been circumnavigated, the positions of all its salient points determined, and the harbours surveyed on large scales—most of the detail of the general coast-line having been procured from the Japanese, who possess good maps of the whole country. The *Sylvia* has also completed a good deal of useful work in the Inland Sea, which will enable a new chart of that now much-frequented navigation to be published, and has surveyed Nambu Harbour, in Yamade Bay, on the east coast of Nipon. The ship has been most actively employed during the whole season.

Eastern Archipelago.—H.M.S. *Nassau*, Commander Chimmo, has been employed in the examination of the western part of the Sulu Sea, between the *Rifleman's* Survey of Balabac Strait, and the Islands of Cagayan Sulu; she has carried some soundings, and fixed the positions of some dangers across the sea, between Balabac and Ilo Ilo, in the Island of Panay, one of the Philippines, and has commenced the survey of the channels among the Sulu Archipelago, between the Sulu and Celebes Seas.

River Plate.—During July and August last, Lieutenant Dawson, with an assistant, and aided by the officers of the Brazil Squadron, made a careful examination of that portion of the River Plate between Monte Video and Buenos Ayres, from which the chart will be corrected; and so long as the light-vessels are kept in position, vessels after rounding the tail of the Ortiz Bank, may steer for Buenos Ayres without fear of the numerous shoal-spots which were shown on the old chart.

Expedition for Oceanic Investigation.—Returning to the subject of physical geography, and the exploration of the bed of the sea, it will be satisfactory to those who are interested in such investigations, to know that it is the intention of the Admiralty to send

out, towards the close of the present year, an expedition, on a considerable scale, for the exploration of the three great ocean-basins; to investigate their physical and biological conditions, to ascertain their depths as far as may be, and to trace their currents and temperatures, superficial and serial; in the interests of geography and hydrography, to visit and explore islands in the Pacific and Southern Oceans, of which little more is known at present than that some of them exist, and that may have been multiplied over and over, through the incorrect observations of ancient discoverers and navigators.

The results of the expedition generally, it is hoped, will be such as to tend to the advancement of scientific knowledge, and to further objects of practical utility, such as can only be achieved by fitting out a vessel specially and exclusively devoted to such a service, accompanied by men competent in all branches of physical science, which are to be represented, and liberally provided by the Government with all materials and appliances necessary to ensure success.

In concluding this Report, it is due to two of the most able and experienced of the Admiralty Surveyors, whose names for long prominently appeared in these pages, to notice that they have lately retired from active service afloat, viz., Captains E. K. Calver and John Richards: the former for many years in command of the Survey of the Eastern Coast of the United Kingdom, where his name will be long remembered in connection, not only with the hydrographical, but with most of the great engineering and nautical works of the time; the latter no less distinguished for his labours while conducting the surveying operations in the China Seas, than for the excellent Survey of the Channel Islands, lately completed by him. Their useful labours will be remembered and appreciated by seamen, and will endure as fitter monuments to their skill and industry than any tribute which could be paid to them here.

Summary.—In addition to the usual tide-tables, light lists, hydrographical notices, &c., which have been published during the past year, there have been new editions of Sailing Directions for the West Coast of Scotland, the British Channel, the Black Sea, and the Eastern Coast of Southern and Central America, and Gulf of Mexico.

Sixty-three new charts have been engraved and published, while above 1400 have been added to and corrected; and during

the last year 140,000 charts have been printed for the Navy and the public.

OCEANIC CURRENTS.—The Temperature-soundings which have been recently taken in the course of the explorations of the Deep Sea, carried on by Dr. Carpenter and his colleagues, have led him to put forth a doctrine in regard to a General Oceanic Circulation, sustained by difference of temperature alone, which has been accepted as valid by many eminent Physicists, and, if substantiated by more extended inquiry, must have an important bearing on many questions of the highest interest in Physical Geography and Geology.

Dr. Carpenter bases this doctrine upon the fact, long since experimentally determined by Despretz, though ignored by many writers on the Physics of the Sea, that sea-water does *not* expand, as fresh water does, from 39° downwards, but continues to contract until it freezes, attaining its maximum of density at about 25°. And he argues that, as a column of Polar water thus weighs much more than a column of Equatorial water of the same height, its excess of lateral pressure must cause an *outflow* of the *lower* stratum of glacial water from each Polar basin, along the deepest channels of communication with other Oceanic basins, lowering the temperature of their sea-bed as far as such outflow extends. And since the reduction of level caused by this outflow must produce an *indraught* of *surface-water* to replace it, which will in its turn have its own density augmented by Polar cold, the excess of downward pressure in the Polar column will be constantly renewed, so far as to impart a continual *downward* movement to its entire mass; and this will maintain a *constant* outflow of glacial water along the sea-bed, from each Pole towards the Equator. In its course, however, this stratum will be subject to the heating influence of the warmer crust of the earth beneath, and of the warmer water above; and thus in the Temperate and Tropical areas there will be a continual *upward* movement of Ocean-water, replacing that which has been drawn away from their upper stratum by the Polar indraught. Thus a constant *vertical circulation* will be maintained, analogous to that which takes place in the water-pipes of a heating apparatus; except that the movement which is sustained in the latter by the application of *bottom-heat*, is sustained in the former by *surface-cold*—the disturbance of equilibrium being alike in both cases.

The evidence of such a circulation is found by Dr. Carpenter, *first*, in the general prevalence of a temperature but little above 32° over the deep ocean-bottoms, even under the Equator, as indicated by recent Temperature-soundings taken with thermometers protected against the effects of pressure, which vitiated all the older observations; and *second*, in that "set" of an upper stratum of comparatively warm water towards the Arctic area, which all recent observations concur in indicating. That the deep stratum of glacial water must have been derived from the Polar areas, he argues from the fact that the water of the Mediterranean—which is cut off by the ridge at the entrance of the Strait of Gibraltar from communication with the deeper stratum of the Atlantic—has a temperature of from 54° to 56° at depths between 1500 and 1900 fathoms, at which depths the Atlantic under the same parallels has a temperature *nearly twenty degrees lower*. And that the warm upper stratum, which carries a summer temperature of 50° to the North Cape, is neither (as supposed by some) an extension of the Gulf-stream proper, or Florida current, nor (as maintained by others) a mere surface-drift, he regards as fully proved by the Temperature-soundings taken in the "Porcupine" Expedition south-west of the Faroe Islands, which show that its excess of warmth extends to at least 500 fathoms. From a comparison of the temperatures there obtained from the surface downwards, with those obtained at corresponding depths in lower latitudes, he argues that *the whole upper stratum of North Atlantic water* has a movement towards the Pole, which, combined with its excess of momentum derived from the earth's rotation, will give it a north-east direction; this movement being exactly what the doctrine of a Thermal circulation would predicate, as the necessary complement of the "creeping flow" of the deep stratum of glacial water in the opposite direction.

This *vertical* circulation is quite independent of the *horizontal* circulation sustained by the action of Winds; and does not, like the latter, produce sensible currents. But, if Dr. Carpenter's reasoning is correct, it performs the principal part in the amelioration of the climate of North-Western Europe, by transporting thither a vast body of water, of which the temperature is but little below that of the Mid-Atlantic; whilst it brings from the Polar into the Equatorial area a vast body of glacial water, which helps to mitigate the intense heat of the latter.

The complete elucidation of this question will require an extensive collection of accurate Temperature-soundings, taken at various

depths and in various parts of the Oceanic area. Such a collection will doubtless be made in the Circumnavigation Expedition for Deep-Sea Exploration, which is now being fitted out (at Dr. Carpenter's instance) by Her Majesty's Government, and which is mentioned in the Report of Admiralty Surveys on a previous page. But, as the work of this Expedition will probably lie for the most part in the Southern Oceanic basins, the enquiry will be incomplete unless the determination of the precise Thermal relation of the Arctic Sea to the North Atlantic is effected by a North Polar Expedition.

RECENT PUBLICATIONS.—*Petermann's 'Geographische Mittheilungen.'*—Among the important original papers which have appeared in this most valuable Geographical Journal, since the date of our last anniversary, those relating to the German North Polar Expedition, in the organization of which the able editor has himself taken such an active part, are the most numerous and complete. We shall have occasion to notice the interesting results of some of these voyages in a subsequent portion of this Address.

The papers relating to European geography include, an authoritative description of the limits, area, and minor divisions of the new German province of Elsass-Lothringen, by Dr. Hermann Wagner; and an important addition to the topography of Central Turkey, in the facts collected and surveys made by Dr. Ferdinand von Hochstetter, whilst travelling in the little-known region which surrounds Mount Vitós.

One of the most valuable papers on Asia is that on Eastern Turkistan and its surrounding mountains, compiled from all available information, derived from the journeys of Hayward, Shaw, Forsyth, and the Russian explorers, and giving an admirable summary of the rise of this independent kingdom, its relations with the surrounding powers, its trade, cities, and population, whilst the accompanying hypsometric map is calculated to afford a true conception of the vertical configuration of this part of Asia. The paper describing Von Richthofen's more recent journeys across China, inland from Canton to Peking, is also of great importance, bringing into notice the vast undeveloped resources of the ancient empire.

Among the papers on African geography are the interesting letters from the now well-known botanist and traveller Dr. Schweinfurth, forming a continuation of the narrative to which allusion was made by my predecessor in last year's Address.

These letters trace the journeyings of this eminent traveller in the region of the Upper Nile in 1869, 1870, and 1871, rich in geographical results, until his happy return in safety to Europe, towards the close of last year. Dr. Nachtigal's journey to Kuka on Lake Chad, bearing presents from the King of Prussia to the Sultan of Bornu, in recognition of services rendered by that potentate to German travellers, and his ethnographic researches in Wadai, is also narrated in repeated communications from the traveller, who is still believed to be in the Soudan. The progress of exploration and the extent of our knowledge of that region of West Africa through which the lower course of the great Ogowai River flows, is the subject of a memoir in which the work done by the explorers Genoyer, Fleuriot de Langle, and Aymes, of the French Marine, Du Chaillu, and Walker, is thoroughly discussed, and cartographically represented.

A first accurate notion of the vertical configuration of South-Eastern Australia is given in a map of Victoria, contoured from the hypsometrical measurements made by Dr. Neumayer, in connection with the magnetic survey of the colony.

Most important among the hydrographic papers is one by the meteorologist Mühry, on the system of ocean-currents about the extremity of South America, in which he proves a remarkable extension of the warm Brazilian coast-current, corresponding to that of the Gulf-stream in the North Atlantic, south-westward beyond Cape Horn, between the Antarctic drifts of the Pacific and South Atlantic, and shows that the well-known Cape Horn current is not, as has generally been believed, a branch of the deep Antarctic current of the Pacific, but that it is truly a surface-drift of the prevailing westerly winds. The warm extension of the Brazil current is believed by Mühry to pass beneath it, and thus to account for the remarkable southward bend in the limit of drift-ice beyond Cape Horn; the icebergs sinking deeper than the wind-drift round the Cape, are held back from it by the warm south-westerly current.

'*Our Ocean Highways.*'—Under this title has appeared for some time past a monthly Journal, as 'Monthly Supplement to the Annual Volume of the Geographical Record and Travellers' Register.' It contains in each number a popularized summary of Geographical facts, such as the progress of expeditions, remarkable travels, and so forth, and seems well calculated to assist in the spread of information of this character in this country and abroad. I am informed that in future, and under improved editorship, this publication will

add original articles on Geographical subjects and reviews of all important Geographical works and books of travels.

Switzerland.—Our esteemed Honorary Corresponding Member, M. J. M. Ziegler, of Winterthur, has sent us his usual elaborate and complete *résumé* of the progress made in Switzerland during the year, in geography and the allied sciences. He divides his report into geodetic operations, topography, physical geography, geology, and statistics. Although the scientific division of labour, as now so beneficially established in our own and other countries, does not permit us to give so wide an extension as this to the studies of our Society, it is unquestionable that an acquaintance with the chief results in all allied sciences is necessary to the geographer. Under the head of geodesy, M. Ziegler describes the arrangements made to arrive at the exact determination of the longitudes of Zurich and other places, and also the year's progress in the *nivellement de précision*, which has been continued for many years past, and has for its object the settlement of the vertical configuration of Switzerland. These and similar operations are carried out by the Federal Geodetical Board. In topography he mentions the publication of four sheets of the survey of the neighbourhood of St. Gothard, and the continuation of the reduced general maps of General Dufour. With a view to effective administration of forests, many Swiss municipalities are now having surveys and maps executed of their respective domains, on the large scales of 1:500 and 1:5000. With regard to recent researches into the physical geography of Switzerland, M. Ziegler records with much detail the observations and experiments of Messrs. Ch. Dufour and F. A. Forel on the condensation of aqueous vapour in contact with glaciers and on evaporation. One of the chief results of the careful series of observations carried out by these gentlemen appears to be the demonstration of the great drying power of ice,—the difference of humidity of the air over the Rhone glacier and that over clear ground in the neighbourhood being 32 per cent.

The statistical inquiries of the Swiss extend into such subjects as the number of public libraries in the Confederation (2090), and the proportion both of libraries and their contained volumes to the three sections of the population respectively,—German, French, and Italian. The amount of public money annually spent on public instruction is nearly 200,000*l.*, of which 66,000*l.* are granted for purely scientific education. With regard to geology, which, in its

investigation of the surface phenomena of our globe connects itself so closely with geography, our correspondent calls attention to an interesting little book by Heim, entitled '*Blick auf die Geschichte der Alpen*,' which, with the exceedingly instructive geological section which accompanies it, presents in a clear light the effect of the denuding agents—water and ice—in determining the present configuration of this rugged land. The section shows how seldom the synclinal (valley) and anticlinal (ridge) positions of stratification of rocks correspond with the present valleys and hills; thus demonstrating, as Ramsay and Geikie have done in our own island, how erroneous is the view that the inequalities we now observe on the earth are the sole result of the subterranean forces.

Another of our Corresponding Members for Switzerland, Professor Paul Chaix, of Geneva, to whom the Society has been indebted on many previous occasions for valuable information, reports, this year, that an engineering undertaking of great interest to the Physical Geographer is about to be carried out in the more level portion of the country, having in view a considerable alteration of the hydrography of the region. It is the drainage, by means of deepening some water-courses and diverting others, of parts of Berne, Freyburg, Neuchâtel, and Vaud, which now, in consequence of their not being elevated above the general level of the lakes, are, during rainy seasons, liable to be flooded and converted into tracts of morass, unfit for agriculture. The liability to inundation has been yearly increasing, owing to the accumulation of silt, brought by the Aar from Berne and Aarberg, at the point of discharge of the lake-waters. A plan proposed by Colonel La Nicca, a Swiss engineer, has been adopted, by which an underground channel will be constructed from Aarberg to Hageneck, as well as surface-canals, and thus a large tract of country will be added to the wealth-producing soil of Switzerland.

Italy.—The Italian Geographical Society, of which prominent mention has been made in the Presidential Addresses of previous years, continues to prosper, and now occupies a high position amongst the scientific bodies of Europe. This result is no doubt due, to a great extent, to the enterprise and enthusiasm of its President and chief working member, the Chevalier Cristoforo Negri, who may fittingly be styled the Murchison of Italian Geographers. Under his auspices the Society has reached the surprising total of upwards of 1300 members, 70 of whom are Life Compounders. In his

addresses and communications to the Italian newspapers, chiefly 'La Nazione' of Florence, Chevalier Negri succeeds in keeping the Society and the Italian public *au courant* of all the leading geographical events of the day; and at the meetings of the Society memoirs of considerable value by Italian travellers and authors are read and discussed, which afterwards form the substance of the 'Bolletino della Società Geografica.' The last part of this work which has reached us, contains two articles well worthy of the attention of English Geographers, namely, one by Signor Amari on Edrisi and his book, and the other an account of a journey in Russian Turkistan, by Signor Adamoli, a traveller who succeeded in reaching Kokand, and might have told his story at greater length with advantage.

UNITED STATES.—The American Geographical Society, having its centre at New York, mustered, according to the statement made at the anniversary meeting in January last, 554 members. Like our own, this Society has a Geographical library and collection of maps, holds its evening meetings for the discussion of papers, and publishes its Proceedings. The great extent of unexplored territory within the States themselves, and the frequency of Government scientific expeditions, commissioned either by Congress or the separate States to survey portions of the country, seem at present to constitute the chief topics which engage the attention of the Society. These, at least, are the principal subjects on which Professor Gillman discoursed in the last annual Address. From this we learn that, besides California, prominently alluded to by Sir Roderick Murchison in the last Address, the States of New Hampshire, New Jersey, Ohio, Indiana, and Illinois, have lately been carrying on surveys, and publishing the results in volumes of Reports of great value to the Physical Geographer. As Professor Gillman observes, Geological surveys are the common form in these days in which local interest in natural science in the States manifests itself—the rational desire for a thorough knowledge of the mineral resources and the nature of the soils of their respective States, stimulating the local Governments to organize complete and effective surveys. The geological exploration, however, has always to be preceded or accompanied by a topographical survey, and almost every expedition has attached to it a zoologist and botanist, who aid in completing the Natural History of the State. From the combined labours of the different members comprehensive Reports are published, sometimes, as in the Cali-

fornia Survey, in a series of handsome and richly-illustrated quarto volumes, which form a perfect mine of scientific information.

One of the most recent of these local surveys has been that of Dr. F. V. Hayden, in the Hot Spring and Geyser district of the Upper Yellowstone River—a copy of whose Report, accompanied by excellent maps on various scales, has been forwarded to our Society. The remarkable region explored by Dr. Hayden, in his capacity as United States Geologist, lies between the parallels of 44° and 45° N. lat. and the meridians of 110° and 111° W. in the Rocky Mountains, and constitutes an elevated basin-shaped valley through which the Yellowstone River flows in its course towards the Upper Missouri. The river here, near its sources, forms a picturesque lake, 22 miles in length by 10 or 15 in breadth, and lying 7427 feet above the sea-level. Flowing from the northern end of the lake, the Yellowstone cuts its way through the lofty mountain-ridge which on that side hems in the valley, forming a series of those profound and narrow chasms, called cañons, which are so characteristic a feature in the physical geography of the whole region, mountain-peaks rising on all sides to 10,000 feet and upwards, above the sea-level. The chief peculiarity of this elevated basin, besides its beautiful scenery, resides in the hundreds of hot springs of endless variety of temperature, mineral composition, and mechanical force, which rise on all the slopes. The detailed description of these springs and geysers belongs to the province of the geologist rather than to that of the geographer, and I must refer those who wish for further information to Dr. Hayden's Report.* The account, however, which this painstaking *savant* has given of the topography and physical geography of the district must be acknowledged as a valuable addition to geographical science. I must not omit to mention that the whole region, including the lake-basin of the Yellowstone and the neighbouring basin of the "Fire-hole River," altogether comprising an area about 60 miles in length by 50 in breadth, has been recently appropriated by Act of Congress as a National Park, and is therefore reserved in perpetuity for public use and enjoyment.

Although enjoying the advantage of so fruitful a field for scientific exploration in their own territory, Americans are by no means neglecting geographical enterprises in more distant regions. The Arctic Expedition of Hall, now engaged in an endeavour to penetrate the

* Published also in the 'American Journal of Science and Arts,' vol. iii., February 1872.

Polar Basin *via* Smith Sound, and supported by State funds, was noticed by my predecessor in the last Annual Address. Another important undertaking is that of Professor Agassiz, who, as is well known, is at present engaged in deep-sea investigations in the South Atlantic and Pacific Oceans. To aid this truly scientific enterprise, the American Government placed at Professor Agassiz' service a sloop of war, and the expenses are, to a great extent, met by private subscription in the States. An efficient staff of men of science accompanies the Professor, including Count Pourtales, who has charge of the dredging operations and is well known for his previous work in the North Atlantic, Dr. White as chemist, Professor Hill as physicist, and Dr. Steindachner and Mr. James Blake as naturalists. Madame Agassiz, whose talent as a chronicler of her husband's doings is well known to the world, also accompanies the expedition. The expedition was at Monte Video in February last, and sailed thence for Patagonia and the Falkland Islands.

ASIA.—Geographical research in Asia does not lead to the same large and brilliant results as in Africa and Australia. There are, in the former continent, no great discoveries to reward exploration; no important physical features to be determined; no rivers, lakes, or mountains to be introduced for the first time into the map. All that is left for the most successful inquirer is to verify a few doubtful points of Geography, or to fill in topographical details of more or less extent and consequence. Yet is the East so rich in associations of the past, so mixed up with the material interests of the present, that the mere gleanings, as it were, of Asiatic travel, command often more attention than the full harvest of discovery in other quarters.

Palestine and Syria.—Among the most attractive contributions that have been thus made to our geographical knowledge of Western Asia must be noticed, in the first place, the recent operations of the Palestine Exploration Fund. This Society, which was instituted in 1865 for the general investigation of the Archæology and Topography of the Holy Land, confined its attention, for some years, almost exclusively to the excavation of Jerusalem, and the examination of the antiquities in the neighbourhood—and whilst thus engaged, its operations hardly came under the observation of Geographers; but more recently, a series of Maps and Surveys have been executed under its auspices, by officers of the Royal Engineers and by other accomplished travellers, which cannot fail to attract

our notice and admiration, and which indeed merit our warmest acknowledgments.

Captain Wilson, R.E., and Lieut. Anderson commenced their labours for the Palestine Exploration Fund in 1865; they connected Bania with Jerusalem by a series of observations carried from north to south, and made a reconnaissance survey of 1200 square miles of country, fixing the principal points by astronomical observations; they also examined, with great care, the country around the Sea of Galilee, and were thus enabled to make some very notable discoveries and to write some able papers on the Comparative Geography of the district. Captain Warren, who continued the work after Captain Wilson's departure, devoted his attention, at one period, to the country east of the Jordan, and at another to the Plain of Philistia; his survey of the latter region having embraced an area of 800 square miles, and containing 200 positions determined by astronomical observation. Another remarkable traveller, Mr. E. H. Palmer—familiarly named "the Pundit"—one of the best Arabic scholars of the day, and as such peculiarly qualified to deal with the Bedouins, and to explain the geographical nomenclature of the country, has also been engaged under the Palestine Exploration Fund, having, in company with Mr. Tyrwhitt Drake, explored the desert of the *Tih*, between Sinai and Hebron, which was the famous "Wilderness" of the wandering Israelites. During the winter of 1868-69, Captain Wilson, in conjunction with Captain Palmer, Mr. Holland, and Mr. Palmer, conducted the Ordnance Survey of Sinai. The results of this survey have recently been published in five volumes, which—in addition to Papers on the Geography, Geology, Archæology, &c., of the Peninsula; and Photographs—contain special Maps of Jebels Musá and Serbál, and a general Map of the western half of the Peninsula.

In the autumn of last year, the Committee of the Palestine Exploration Fund determined to institute a more general survey, and accordingly despatched Captain Stewart, of the Royal Engineers, with two Non-commissioned Officers of the Royal Engineers, under instructions to measure a base-line in the Plain south-east of Lydda and Ramleh, connect it with Captain Wilson's Survey of Jerusalem, and then to extend the triangulation over the whole country west of the Jordan. Captain Stewart unfortunately fell sick whilst engaged in measuring the base-line and selecting proper trigonometrical stations, and was compelled to return to England; Mr. Tyrwhitt Drake, who was associated with Captain Stewart, has,

pending the arrival of another Officer of Engineers, been in charge of the party, and the Non-commissioned Officers have meanwhile continued the work. Jerusalem has been connected with the baseline by triangulation; and, according to the latest accounts, upwards of 250 square miles of country have been triangulated. It was calculated that four years from the date of Captain Stewart's arrival in Palestine would be sufficient to complete the survey west of Jordan, the expenses being at the rate of about 3000*l.* per annum. If the public will only continue to support the enterprise as effectively as heretofore, we may hope soon to have a Survey of Western Palestine, approximating in accuracy and minuteness of detail to the Ordnance Survey of Great Britain.

It need hardly be said that, as the Palestine Surveys have for the most part been conducted by officers of the Royal Engineers, they are thoroughly reliable as far as they extend, and that the maps which accompany them constitute most valuable additions to our geographical knowledge of Asia. The original maps belonging to the survey, which are deposited in the Office of the Palestine Exploration Fund, but which have never yet been published, are the following:—1. Captain Wilson's and Lieut. Anderson's Maps of the Sources of the Jordan, the Sea of Tiberias, Northern Galilee, and the neighbourhood of Nablus; 2. Captain Warren's Maps of the Plain of Philistia and the district east of Jordan.* To these must be added the two reduced maps, published by the Palestine Exploration Fund in 1871,—one giving "the Wilderness of the Wanderings" from the frontier of Sinai to the Dead Sea, as constructed from the route-surveys of Messrs. Palmer and Drake; and the other continuing the survey to the northward, and entitled "A Map of Moab," as it embodies the investigations of Captain Warren and Mr. E. H. Palmer in that province. Nor must I omit to notice in this series the very excellent sketch-map of the Peninsula of Sinai, which was presented to this Society by Mr. Holland in 1868, and which appeared in our 'Journal' of the following year.

The discovery of the famous monolith of Dhiban, has invested with a special interest the geography of the district of

* There are two official maps of an older date, which cannot be overlooked in a *résumé* of our geographical knowledge of Palestine, derived from British sources, as they really furnish the basis for all the later surveys. These are, firstly, "The Syrian Survey," executed by Captain Mansel, *R.N.*, in 1861-62, and published for the Admiralty on three large sheets; and, secondly, Major Rochfort Scott's Map of Palestine, compiled from the surveys of several British officers in 1841, and engraved by Arrowsmith for the Foreign Office.

Moab, and it is important therefore to notice that the country has been examined on two recent occasions; firstly, by Messrs. Palmer and Tyrwhitt Drake, in continuation of their journey through the desert of the Tih and Idumæa, and more lately by Dr. Tristram and Dr. Ginsburg, who obtained a special grant from the British Association for the purposes of their expedition. The country is not inviting to the traveller, the Bedouin being faithless and avaricious, and there being little of real interest to compensate for the danger and expenses of exploration. Mr. Palmer, indeed, than whom we cannot have a better authority, has left it on record that "above ground, at any rate, there is not another Moabite stone remaining." The details of Canon Tristram's expedition into Moab and Edom have not yet been made public; but it is known that his party were detained as prisoners at Kerak, and were only released at last through the intervention of the Turkish authorities.

Our old Fellow and correspondent Captain Burton, imagined, he says, that, "when he was transferred to Syria and Palestine, his occupation as an explorer was over;" but he soon found that although the highways of the country were well worn, there were large tracts in the interior wholly unvisited by Europeans; and to the examination of these tracts he accordingly devoted himself with his characteristic ardour, in his few intervals of leisure from official duty. At one of our recent evening meetings he thus gave us a very interesting account of a tour which he had made last year, in company with Mr. Tyrwhitt Drake, through the volcanic region east of Damascus; and he has since sent in a paper on the Anti-Libanus, which is of almost equal interest.

Asia Minor.—The regions both to the north and south of Syria have also been recently brought under the notice of the Fellows at our evening meetings. Mr. Gifford Palgrave, so well known for his adventurous journey through the Arabian Peninsula in 1867, has recently described to us a tour which he made last year from Trebizond into the interior of Asia Minor, and in which he detected unmistakable traces of glacial action on the plateau through which flows the Upper Euphrates, as well as in the valleys conducting from the plateau to the shores of the Black Sea. He visited the same general tract of country between Erzingau and Kara Hissar which had been previously described in the pages of our 'Journal' by Mr. Consul Brandt and Mr. Consul Taylor, but followed an independent route throughout, and thus added many fresh details of much geographical

interest to their published accounts. Major Millingen, equally well known as a soldier and an author, who commanded a body of Turkish troops for some years in this part of Asia Minor, and had thus enjoyed great facilities for examining the country, contested some of Mr. Palgrave's statements on the occasion referred to, and has since presented us with a paper on the mountains of Lazistan, which contains some interesting details.

Arabia.—In Southern Arabia the extension of our geographical knowledge has been not less marked. Captain Miles, Assistant to the Resident at Aden, has penetrated on several occasions into the interior of the country, thus adding largely to the geographical materials collected by Wrede; and he has further been fortunate enough to obtain several new copper tablets and other Himyaritic antiquities, such as coins and idols, besides a series of the rarest Arabic MSS. on the history and geography of Yemen. But the most important accession to our knowledge has been contributed by the Baron von Maltzan, who, although his personal exploration did not extend far from the sea-coast, in the neighbourhood of Aden, succeeded, nevertheless, by a careful and methodical course of inquiry among the Arab tribesmen, in reconstructing the map of Southern Arabia. In the country, indeed, extending from the mouth of the Red Sea as far as Macullah, and which answers to the Hadhramūt of the Arab writers, Von Maltzan has recovered about 2000 names which were previously quite unknown, and has thus enabled Petermann to lay down a well-filled map, intersected by routes, and exhibiting clearly-defined physical features, over a space of some 500 square miles, which was formerly a blank in Geography.

Overland Communication.—A subject which has excited, and continues to excite, much public attention, from its close bearing on the national interests, has also thrown considerable light on the geography of Western Asia. I allude to the inquiry into the communication with India through Turkey by means of a railway from the Mediterranean to the Persian Gulf. This subject, which was partially investigated towards the close of the last session of Parliament, has now been under the careful and continuous consideration of a Select Committee of the House of Commons, for some months past, and a vast amount of evidence has been taken from travellers and others personally acquainted with the country, as to the practicability of the enterprise, and the best line of route to be followed in joining the two seas together. However much opinion may differ as to the advisability or necessity of a Government guarantee in order to float the

project—the question depending partly on the political value of our thus having a second or alternative line to India, and partly on the possibly remunerative character of the undertaking—it is, at any rate, satisfactory to observe that the witnesses examined by the Committee have been unanimous in affirming that no engineering difficulties are to be met with in any part of the line, with the exception, perhaps, of ascending Mount Amanus from the Mediterranean level, at the upper end of the line, and the bridging, if necessary, one of the great Mesopotamian rivers towards its lower extremity. The only notable disagreement, indeed, seems to have reference to the superior eligibility of a line by the valley of the Euphrates or by that of the Tigris, and on this point a good deal of evidence was taken of much interest to Geographers. To enable the Committee to understand more fully the geographical question, and especially in reference to the possibility of connecting the Mesopotamian line with Constantinople, a series of Consular Reports has since been put in by the Foreign Office, which pretty well exhausts the subject of the various practicable routes through Asia Minor. The reports, especially by Mr. J. Taylor, one of our most valued contributors, by Mr. Skene, and Mr. R. Wood, are, in fact, elaborate geographical essays, describing the passes of the Taurus and the physical features of Anatolia and Northern Mesopotamia, and, as such, would seem more suited to the pages of our own popular 'Journal' than to the dignified "limbo" of a Parliamentary Blue-book.

Map of Western Asia.—It is very agreeable to me, in connection with this subject, to be able to announce that the Indian Council—recognising the importance to the great empire over whose interests they watch, of placing before the public all available information with regard to the overland communication—have resolved to utilize the extensive materials at their disposal, in the construction of a large general map of the countries between the Mediterranean and the Persian Gulf. This work has been entrusted to Commander Felix Jones, of the late Indian Navy, who was himself resident in the country for about twenty-five years,—occupied partly in political and professional duties, and partly in conducting the Mesopotamian Survey,—and who, moreover, is one of our most accomplished draughtsmen and one of our best practical geographers, having served for several years upon the Council of our Society; and he expects to be able to accomplish his task in the course of the next eighteen months. This great map, bounded on the west by the Mediterranean, will

take as its eastern limit the line of frontier between Persia and Turkey, which was laid down with the most scrupulous accuracy and in minute detail, over a space of 1000 miles, extending from Mohamrah to Ararat, by the famous mixed Delimitation Commission, presided over, on the part of England, by Sir Fenwick Williams of Kars. The northern boundary of the map will be the line of the Taurus, while on the south it will stretch far into the Arabian Peninsula, so as to include all the surveys and reliable route-tracks of Syria and Palestine, of Asia Minor and Kurdistan, of Mesopotamia, Babylonia, and Arabia. It will thus embody in one general view all the geographical work of the Palestine Exploration Fund, all the information scattered through the pages of our 'Journal' in the various memoirs of Burton, Palgrave, Wallin, Chesney, Consul Taylor, the Lynches, Ainsworth, Drs. Forbes and Ross, Messrs. Loftus and Layard, &c.; and more particularly it will exhibit, in a connected form, the highly instructive surveys of Babylonia and Chaldaea executed by Captains Felix Jones and Selby, Lieutenants Collingwood, Bewsher, and other officers of the Indian Navy, which at present only exist in manuscript, and are thus not available for general reference.

Railway to India.—It is possible that the whole subject of the overland communication with India by means of a railway, in so far as regards the geographical character of the intervening countries, may come on for consideration before long at an evening meeting of our Society, as Mr. Andrews, to whose unwearied and persistent efforts it is mainly owing that the project has at length taken a substantive form, has undertaken to draw up a paper which shall place the main features of the case fairly before the public, and shall invite discussion thereupon. In such an event, we should have to consider, firstly, the comparative merits of three lines through Asia Minor: namely, the northern line through Amasia and Erzeroum to Tabriz; the centre line by Uzgát and Sivás to Diarbekir; and the southern line by Konieh and the Cilician Gates to Aleppo; we should then have to weigh the advantages of a line down the valley of the Euphrates, from Aleppo direct by Annah and Hít to Grain on the Persian Gulf, against a proposed circuitous route down the valley of the Tigris, by Mosul and Baghdad to Busserah or Mohamrah; and we should finally be called on to trace certain alternative lines through Persia,—the northern line leading either from Tabriz or Baghdad to Teherán, and thence passing by Herát and Candahár to the Indus, while the southern line would either circle round the

sea-coast from the mouth of the Euphrates to the mouth of the Indus, or, ascending the Persian plateau between Shuster and Shiráz, would follow a valley which is said to run due east between two parallel ranges from the vicinity of Kermán to our own frontier, at no great distance from Karachi.

Persian Surveys.—This last-mentioned line might receive some valuable illustration from recent Persian explorations, which I now proceed briefly to notice. The officers of Royal Engineers employed in superintending the Indo-European line of telegraph through Persia have on many occasions rendered valuable aid to the cause of geography; but nowhere have their services been more conspicuous than in the recent deputation of Captain Lovett to assist Sir Frederick Goldsmid in his arbitration commission on the Kelát frontier. Captain Lovett first travelled along a line from Shiraz to Bunpoor, which had been previously touched at different points by Pottinger, by Consul Abbott, and by Khanikoff, but had never been continuously surveyed, and he then proceeded to a reconnaissance of the disputed frontier, descending from Bunpoor to Guadur, on the sea-coast within the Persian boundary, and ascending from Guadur to Pnujgoor, on the Belooch or eastern side of the frontier. Major Ross, the Political Agent on the Mekrán coast, had also on a previous occasion passed in a nearly direct line from Kej to Beileh, and the map accordingly—which has been constructed to illustrate these various travels and to furnish at the same time a definite record of the Perso-Kelát frontier, as finally decided on—exhibits a very marked improvement on the old skeleton maps, which contained nothing but the isolated routes of Pottinger and Grant. Captain St. John, R.E., has also still more recently accompanied Sir Frederick Goldsmid from Kermán to Seistán, in order to map the contested Perso-Afghán frontier about the delta of the Helmund River. Seistán has but rarely been visited by Europeans. Christie, early in the century, and Edward Conolly, Forbes, and Khanikoff, in more modern times, are the only travellers who have ever penetrated to the mysterious lake and its sacred island, so celebrated in Persian romance; and as all these travellers were more or less hampered in their movements by the jealousy of the natives—Dr. Forbes having, indeed, lost his life in Seistán, as I reported to this Society thirty years ago (see vol. xiv. p. 179)—it is probable that much new geographical matter may be collected by the present Mission. Sir Frederick Goldsmid was also joined in the vicinity of the lake by Colonel Pollock and Dr. Bellew, who had travelled from Candahár to Seistán, along the

banks of the Helmund, by a line never followed but by my Candahár assistant, Lieutenant Pattinson, in 1841; and the whole party has since adjourned to Teherán, where it is proposed that all frontier difficulties shall be discussed and adjusted, and where a map of the country will be constructed from Captain St. John's register of observations, which, for the first time, will give us reliable information as to the true longitude of the lake.

The Havildar's route.—Passing further to the east, our best thanks are due to Major Montgomerie, who, to his adventurous explorers, the Pundit and the Mirza, has now added a third anonym, known by his rank of Havildar. This bold, energetic, and well-trained officer passed, with his instruments, in a direct line through the mountains from Peshawer to Badakhshán, observing for latitude in the Swát, Punjkora, and Chitrál valleys, and keeping a careful field-book, from which his route has been protracted from the fixed points of the Trigonometrical Survey within our Indian frontier till it joins the Mirza's route at Fyzabád. There can be no doubt but that the Havildar incurred great personal danger in this journey, having been brought into direct contact with the chiefs of Chitrál and Yassin who compassed the death of Mr. Hayward, and that he owed his safety to a combination of boldness and discretion which is very rare in an Asiatic. It was intended that the Havildar should have passed on from Badakhshán, by Darwáz and Karategín, to Kokand; and it is greatly to be regretted that he was unable to follow out his instructions in this respect, as he would thus have cleared up the mystery of the double Darwáz and explained the geography of the country about the upper affluents of the Oxus, which the scanty data of Molla Abdul Mejid's return journey in 1864 have thrown ever since into deplorable confusion. The Havildar, on his return journey from Badakhshán, crossed the same passes (the Durah Pass, between the Oxus Valley and Chitrál, and the Lahouri Pass, between Chitrál and Dír) which were traversed by Pundit Munphool in 1866; but it must be remembered that the last-named traveller, however valuable his services as a Political Agent, was no observer, and that Major Montgomerie's *employé* is thus entitled to the merit of having for the first time defined the position of the Chitrál Valley—a line of country which, sooner or later, will assuredly be the high road of communication between India and the plains of Turkistán.

Yule's 'Marco Polo.'—In the brief address which I delivered to you at the commencement of the Session, I ventured to assert that the pub-

lication of Colonel Yule's '*Marco Polo*' was the great geographical exploit of the year. That statement, I am happy to say, has been since confirmed by the unanimous verdict of public opinion. The amplitude of research, indeed, and the extraordinary care with which the geography of Central Asia has been explained by Colonel Yule, along the line followed by the Venetian traveller from the shores of the Persian Gulf to the furthest limits of China, and the still more curious dissertations which illustrate the return sea-voyage of the party, through the Eastern Archipelago and along the coast of India, may well excite not only the admiration but the amazement of ordinary students. The Council of our Society has shown its appreciation of this wonderful work by awarding to its author the Patron's Medal of the year, and it is my honest and deliberate conviction that the Medal has never been more worthily bestowed. I may add that Colonel Yule, notwithstanding his vast labours, seems to feel that the geography of Central Asia is far from being as yet exhausted, and that he is thus still gathering laurels and ministering to our instruction in this field of research, having recently contributed to the '*Journal of the Royal Asiatic Society*' a very valuable memoir in explanation of the travels of the Chinese pilgrim, Hwen-Tsang, in the Oxus valley; and having also accumulated extensive materials for the further illustration of the province of Badakhshan, which he will either embody in his introduction to the new edition of Captain Wood's '*Travels*,' or will publish in a separate form.

Shaw's 'High Tartary.'—Our other Medalist, Mr. Shaw, has also recently published a very interesting volume containing the narrative of his two expeditions into Turkistan. It will be remembered that Mr. Shaw visited Yarkand and Kashgar in 1868-69, at the same time as our own agent Mr. Hayward, and thus shared with that officer the credit of having re-introduced us to an acquaintance with those cities, after they had been lost for many centuries to European geography. Some interesting extracts from Mr. Shaw's journal were published at the time in our '*Proceedings*,' and would have attracted more notice, but for the fuller narrative of his companion traveller, which occupied 100 pages of our fortieth volume. In 1870 Mr. Shaw, who had in the mean time returned to England, was summoned by telegraph to India, in order to proceed a second time to Turkistan in the suite of Mr. Forsyth, who had been officially deputed by the Viceroy to visit the court of the Ataligh Ghazi, and endeavour to open out a commercial intercourse between Yarkand and the

Punjab through Ladakh and Cashmere. On this journey Mr. Shaw explored a portion of the Karakoram Mountains that had not before been visited, and the letter which he wrote to Sir Roderick Murchison on the subject, and which has since been published in our 'Proceedings,' was noticed with the highest commendation in our President's last Anniversary Address. We have now Mr. Shaw's complete narrative of his two journeys,—a work of such authority and interest, as to have shared with Marco Polo the honour of being reviewed in a masterly article of the 'Quarterly Review;' and it is chiefly in acknowledgment of the merits of this work, and of the great value of the astronomical observations which were taken by Mr. Shaw during his journey, and which for the first time have fixed the longitude of Yarkand, that we have awarded him the Patron's Medal for the year. Still more recently Mr. Shaw has furnished us with some curious information respecting the probable site of the lost city of Pein, and he has further confirmed, from local information, Colonel Yule's correction of the longitude of Charchand and Lob. His latest contribution, too, has, in a geographical point of view, been particularly valuable, since amongst the itineraries which he has obtained from native travellers, there is one, leading from the Pangong Lake to Khoten through the Aksai Chin, considerably to the eastward of the line by Leh and the Chang-Chenmo Pass, which clearly proves that the Kuen-Luen chain does not stretch away at the same elevation, as had been sometimes supposed, to the south of the Taklá Makán desert, but on the contrary, slopes gradually down from Kiria eastward into the Thibetan uplands, and is hardly to be recognised as a continuous range beyond the meridian of 85° east longitude.

River Oxus.—Before quitting the subject of Central Asia, I desire to say a few words on the geography of the Oxus. As this river, from the 66th meridian to the eastward, has been adopted as the frontier between the Uzbek and Afghan States, and will thus in all probability mark in due course of time, the line of division between the Russian and British-Indian Empires, the definition of its course and the investigation of its many affluents have become of great importance to Political Geography. The accumulation of materials for a "Monograph on the Oxus" has accordingly occupied much of my leisure time for the last two years, and although Sir Roderick Murchison's announcement in his last Anniversary Address that the Memoir would be published in our 'Journal' of this year cannot now be realized, still I am able to say that the paper is very nearly

completed. The first portion of the Memoir, indeed, which treats of the antiquities of the Oxus Valley, and which was read before the Geographical Section of the British Association in 1870, has been already printed, and the second and third portions are in a very forward state. In the second portion, which is devoted to a careful delineation of the Upper Oxus, from its source in Pamir to the confines of Kharism, I have derived great assistance from the geographical work of Ibn Dusteh, an author of the third century of the Hejreh, who gives a more detailed and methodical account of the hydrography of this part of Asia than is to be found in any other Oriental writer. Ibn Dusteh describes four river-systems as combining to form the Oxus:—1stly. The true Jihún, rising in Thibet (Thibet was a general name for the country east of Badakhshán), and flowing westward, through Vakhán, under the name of the Vakháb. (This is the modern Panjeh.) 2ndly. The Vakhsháb, rising in the upper country of the Kharlukhiéh Turks, and passing in succession through the districts of Pamír, Rásht, and Kumid (Roshan and Kum), to the famous "stone bridge," and uniting with the Vakhsháb at the ford of Mileh. (This is hardly reconcilable with the usually received identity of the Surkháb and Vakhsháb, and rather points to the Kárakúl branch of the Oxus, which may perhaps, after all, be the real Darwáz River.) 3rdly. The Rámid, rising in the hills above Rásht, and flowing towards Chagánián, where it is joined by the Kam-rúd, the Nihám-rúd, and the Kháwer-rúd (*i. e.* the various branches of the Hissár River), which come from the mountains of Búttúm and those of Sinám, Nihám, and Kháwar. It finally passes Baraghán, on the Vakháb (modern Bulgewan), and Kevádián, and joins the Jihún above Termid. (This mention of Sinám in connection with Nihám, now called Kafir-nihán, suggests that the famous fort of Mokanna, "the veiled prophet," was at Hissár.) And 4thly. The river-system of Badakhshán, formed of the Fargham (river of Jerm), the Vartán (Bartan of Edrisi, Ortanj of 'Timur's History' and modern Vardej), and the *Jilan* (a doubtful name, perhaps the Sir Gholam of Wood). This notice, which is far more detailed than that of the standard geographers, Istakhrí, Ibn Houkal, Edrisi, &c., has never before been published, and its value will be at once appreciated by those who have investigated this very obscure, but, under present circumstances, not unimportant subject.

The third portion of the "Monograph on the Oxus" refers to the delta of the river, and traces up the history of the several changes

of its course between the Caspian and the Aral, from the earliest times to the present day. My general views on this subject, which, however, were disputed by Sir Roderick Murchison, formed the subject of an address, which I delivered to the Society in 1867, and they have recently been placed before the public in more detail; but in a matter of so much interest, the evidence adduced cannot be too minute and circumstantial, and I propose, therefore, in the Monograph in question, to quote all the original authorities—not only Greek and Latin, but Arabic, Persian, Turkish, and Russian—proving, as I hope, from their united testimony, that the deflection of the waters of the Oxus into the Aral having been caused in modern times—not by any upheaval of the surface of the Turcoman desert, but by the simple accidents of fluvial action in an alluvial soil—the restoration of the river to its old bed debouching into the Caspian, which is now under the serious consideration of the Russian Government, is a work of no engineering difficulty whatever, and will thus be assuredly accomplished as soon as the neutrality of Khiva is secured either by negotiation or by arms.

Indian Surveys.—During the season of 1870-71 the Great Trigonometrical Survey, proceeding on six series of triangulations, completed 11,203 square miles of principal and 10,076 of secondary work. In Assam, the party under Mr. W. C. Rossenrode encountered considerable difficulties, the plains being covered with grass 12 feet high, the hills clothed with dense forest, and the smoke from the burning jungle often forming a dark canopy which obscured the view. The whole party also suffered from fever, and the progress made, in the face of such obstacles, is creditable to the perseverance and resource of Mr. Rossenrode and his fellow-workers. Progress has also been made with the Brahmaputra, Beder, Bilaspur, and the two Bangalor Series. The topographical operations under the Superintendent of the Great Trigonometrical Survey have been carried on in Guzerat, Kattywar, and the Cossi Valley; and two parties under Captain Herschel and Lieut. Trotter have been at work on latitude observations.

It is considered a most important object to have the Russian and Indian geodetical operations in the same terms, and this has been effected to some extent by an interchange of instruments. Capo Comorin is already connected with two stations north of Chaugchenmo, and if the Russians bring their triangulation to their outposts on the Tien-shan, the two surveys will only be separated by a distance of 400 miles across a country presenting no physical

difficulties. Thus the connection of the Russian and Indian triangulations may be looked forward to as a great work to be achieved by the present generation.

In September, 1871, Colonel Walker, the Superintendent of the Great Trigonometrical Survey, who is now on leave in England, ascertained the longitude of Teheran by telegraph from London, in communication with Major St. John, R.E., of the Persian Telegraph Department. The signals were sent through the line of the Indo-European Telegraph Company, the Greenwich times of the signals being ascertained by a clock in the Telegraph Office, which was governed by a clock in the Greenwich Observatory, while the Teheran times were determined by sextant observations on the spot by Major St. John. Considerable interest attaches to this operation from the circumstance that, though the distance from London to Teheran along the telegraph line is 3870 miles, and it was necessary to employ automatic relays at five intermediate stations, the entire retardation of the electric current in either direction was found to average less than half a second. Thus there is much reason to hope that, when the necessary instruments are available in India, exact and final determinations of the differences of longitude of the Greenwich and Madras observatories and the stations on the arcs of parallel of the Indian Survey may be obtained without any serious difficulty. The value now determined for the longitude of Teheran is $51^{\circ} 24' 5''$ E. of Greenwich. It differs by less than half a mile from the value which had been previously deduced by Major St. John by combining a telegraphic determination of the difference between Teheran and Kurrachee, which was made by himself, with the trigonometrical difference between Kurrachee and the Madras observatory, which is furnished by the operations of the Great Trigonometrical Survey of India; and assuming for the Madras Observatory the latest and most exact longitude, $80^{\circ} 14' 20''$ E. of Greenwich. This close coincidence between two independent results may be accepted as a sufficient proof that there can be no very material error in the adopted value for the Madras Observatory; and this is a matter of some consequence, as all the most important determinations of longitude in India have invariably been referred differentially to that observatory.

Colonel Walker has completed the first volume of the 'History of the Great Trigonometrical Survey,' and we have been presented with a copy by the Secretary of State for India. As a record of accurate geodetical measurement, and of arduous services well per-

formed, this great work will yield to none that has hitherto been published by any European nation, either in interest or in scientific importance. It contains a very interesting introductory account of the early operations of the survey from 1800 to 1830; but the main body of the work is devoted to a detailed description of the standards of measure, and a record of the measurement of the base-lines.

Six Topographical Survey parties have been at work during 1870-71, under the superintendence of Colonel Thuillier, the Surveyor-General of India, which, together with the Revenue Survey parties in the Bengal Presidency, have completed the mapping of 31,530 square miles. These parties have been at work in Gwalior and Central India, in the Vizagapatam Agency, in the Central Provinces and Rewah, in Malwa and Bhopal, in Khandesh, and in Rajputana. A party, under Captain Badgley, has also accompanied the Looshai expedition, starting from Cachar; and a very valuable contribution to the geography of the eastern frontier of India may be expected from its labours.* Colonel Thuillier has shown his usual activity in publishing useful maps and in meeting the demands of administrative departments, as well as those of the public. As many as thirteen new quarter plates of the Indian Atlas have already been engraved and published at Calcutta, and twenty-one more are in various stages of progress; but the European engraving staff urgently needs to be enlarged. Several important general maps have also either been published, or are in course of publication under Colonel Thuillier's auspices. Among these may be mentioned new general maps of Oudh and Sindh, a very useful map of the eastern frontier, including parts of China and Burmah, and a new map of Orissa.

The Revenue Surveys in India have not hitherto contributed much to our objects, as more attention has, as a rule, been paid to questions relating to the settlement and assessment of the land than to the preparation of materials for maps, in the conduct of these operations. But a really good Revenue Survey, while furnishing complete information for settlement purposes, should be executed throughout on accurate principles, and supply materials for compiling maps for general use. Such a system has always been advocated by Colonel Thuillier; but in the Madras Presidency alone has any approach to a compliance with all these demands been

* It has been recently reported from India that, during the continuance of the Looshai Expedition, the officers of the Survey Department have extended their operations from Cachar on the north to Munnipoor on the south, including within their series of triangles an area of about 4000 square miles.

effected. The Madras Revenue Survey, therefore, is the only one that can at present claim much attention from geographers. Under the able superintendence of Colonel Priestley it has been executed on strictly accurate principles in every stage, and, up to March 21st 1871, the number of square miles that had been surveyed was 41,043. As it is connected with the points of the Great Trigonometrical Survey, it can be made available for geographical purposes by combining the village maps, and publishing them, on reduced scales, as Talook maps. These, again, will be combined to form district maps; and one of the latter is now under compilation. Our thanks are due to Colonel Priestley and his Staff for having, while engaged in the arduous task of defining boundaries, fields, and villages, for fiscal purposes, taken care that their work shall also be available for the construction of useful general maps.

The question of marine surveys is still under the consideration of the Government of India; but the importance of adopting effective measures for securing the due execution and continued revision of marine surveys and charts, is strongly felt both in India and in this country. The Madras Government have reported that several important surveys require to be made along the coasts of that Presidency, and that others require periodical revision. The Bombay Government have shown their sense of the great importance of marine surveys by the measures they have recently adopted. From March to June, 1871, Mr. Girdlestone was engaged, in the schooner *Constance* of 186 tons, in surveying the large inlet of Khor Rappah on the Mekran Coast, between Jask and Chabor, of which he has completed a chart; and the same vessel, commanded by Mr. Chapman, has since been surveying the reefs near Bahrein in the Persian Gulf. On the Bengal side, a survey of the creeks and rivers on the coast of Orissa was completed in 1870-71, by Mr. Harris, an experienced river surveyor, and the charts are being prepared for publication on a small scale at Calcutta. But it is not desirable that these desultory operations should be undertaken by the different local Governments as the need arises, without any combined or systematic plan, with wholly inadequate means, and with an apparent absence of appreciation of the necessity for executing such surveys on rigorous trigonometrical principles. The adoption of effective measures for securing the due execution and continued revision of marine surveys and charts on the coasts of India, is a want which yearly becomes more urgent.

During the autumn of 1871 another portion of the mountain-

region, which bounds India on the north, was examined by Mr. W. T. Blanford, of the Geological Survey. During three months' leave this accomplished traveller, with the main object of studying the zoology of the eastern and northern frontiers of British Sikkim, reached the Donkia Pass, 18,500 feet above the sea, and obtained a view of Tibet. He also ascertained the position of another pass never before laid down in any map, and met with three unmapped lakes. Since Dr. Hooker and Dr. Campbell explored this region in 1849, only one European had penetrated to the Donkia Pass previous to Mr. Blanford's visit last year. Mr. Blanford, who did such excellent work in Abyssinia, has now joined Sir Frederick Goldsmid on the Seistan frontier, and we may confidently anticipate much valuable information from him, regarding the geology and zoology of a country almost entirely unknown. Before concluding my notice of the labours of surveyors and geographers in British India, I may mention that the officers of the Quartermaster-General's Department, under the auspices of Lieutenant-Colonel MacGregor, are engaged in collecting materials for gazetteers of the different countries in Central Asia, and that translations of Meyendorf's journey to Bokhara by Captain Chapman, and of Muraviev's visit to Khiva by Captain Lockhart, have recently been published at Calcutta. Both these young officers served in Abyssinia, and are Fellows of our Society. Some valuable memoirs on different districts in India, containing geographical information, have also been published by Members of the Civil Service. Among these I may mention the Report on Jessore by Mr. Westland, and the Memoir on Ghazepore by Mr. Oldham. The former work contains an interesting description of the river-system in the Jessore district, and of its changes during the past century, including information on the progress of the formation of the Gangetic delta. I may add that a vast amount of very valuable geographical material is being collected and arranged by officers who are preparing memoirs on their respective districts in all parts of India.

Anderson's Report on the Expedition to Western Yunnan.—Dr. John Anderson, who accompanied, as scientific observer, the expedition of Major Sladen from Burmah to the frontiers of Yunnan, has recently published in Calcutta his narrative of the journey. Previously we had no detailed information of this important undertaking beyond the Official Report of Major Sladen and a short paper communicated by him to the Society, of which some account was given in the

Presidential Address of last year. The large and handsome volume now received is a most important contribution to our knowledge of the country lying between the Upper Irrawaddy and the Western frontier of China—a region interesting as forming the ancient commercial highway between Western China and Burmah, and consisting of a series of long elevated valleys of great fertility, peopled by the Shans, a race distinct both from the Burmese and the Chinese, and the seat of an ancient empire. Dr. Anderson treats his subject in an exhaustive manner; one-half this volume consisting of a series of pregnant chapters on the following subjects:—1. A critical account of the former History of the country. 2. The Wars between Burmah and China. 3. A review of the Work of all former Travellers in the region. 4. The Physical Geography and Geology. 5. The Ethnology, which contains a great amount of valuable information regarding the Shans, Kakhyens, and other races to the east of Bhamô. 6. On the Mahomedans in Yunan, comprising a history of the rise and progress of this sect, and an account, which at the present time is of special importance, of the Panthays, who have erected an independent Mahomedan kingdom at the expense of the Chinese Province of Yunan. 7. The trade-routes of Upper Burmah; and, finally, 8. On the Irrawaddy and its Sources; on which subject Dr. Anderson had previously communicated a paper to our Society, which was printed in the 40th volume of the 'Journal.' The rest of the volume is occupied by a narrative of the journey from Mandalay to Momein and back, and by a number of Appendices, all of which are of value to the inquirer. It is seldom, indeed, that we have to record the appearance of a book of Travels, so complete and so rich in solid information as the present. Nevertheless its painstaking author announces in the preface that it forms only the first section of his Report—the second, which is soon to follow, relating to the Natural History of the region, more especially belonging to the appointment he held as Naturalist to the Expedition.

Russian Asia.—The progress of Russia in Asia continues to be an absorbing topic of interest to geographers, owing to the new fields for exploration which are being opened out in the remote regions which have remained for so long a time inaccessible to European travellers.

Since 1868, in which year her empire was enriched by the acquisition of the fertile region between the Jaxartes and the Oxus, and the possession of some of the most wealthy and populous cities of

Central Asia, the efforts of Russia have been chiefly turned towards the consolidation of her new dominions, to the development of their resources and of her Asiatic trade, and to the improvement of the means of communication with these distant provinces. The surprising rapidity with which, during the last ten years, lines of railway have been constructed over the whole extent of Russia in Europe, justify the expectation that in a few years railroads will be laid across the Kirghiz steppes, which intervene between Orenburg and Turkistan. With the view of establishing a new and direct route to Central Asia, by way of the Khanat of Khiva and the Amu Daria, an expedition was sent in the autumn of 1869 to explore and survey the old bed of the Amu Daria, and the steppes of Turcomania, lying to the east of the Caspian. This expedition landed at Krasnovodsk Bay, which is situated in the Gulf of Balkhan, in the 40° parallel of north latitude, on the south-east shore of the Caspian, and immediately opposite the port of Baku, in Daghestan, from which it is only 200 versts distant. Its position is, therefore, well adapted to serve as a base of operations against the still independent Khanat of Khiva, and it will probably become at some future time a great *entrepôt* for the trade between Asia and Europe. Although the unsettled state of the Kirghiz Steppes and the jealousy of the Khan of Khiva have hitherto greatly retarded the progress of the expedition, and have interfered with the scientific investigations of the officers who accompanied it, some interesting details have been communicated to the Imperial Geographical Society.

The topographical labours which have been executed over a distance of upwards of 1000 miles in the directions of east and south-east from Krasnovodsk Bay, combined with astronomical observations for determining the latitude and longitude of the most important places, will now enable Russian cartographers to draw accurate maps of the country east of the Caspian, part of which had not previously been explored by Europeans. Springs of fresh water have been discovered in abundance in the old bed of the Amu Daria; and it is anticipated that, if no greater difficulties are met with in that portion of the river-bed which has not yet been examined, a good caravan-route will, in course of time, be established between Krasnovodsk and Khiva. The studies which are being made in the different branches of natural science are as yet too incomplete to do more than serve as a basis for the further investigation of the basins of the Aral and Caspian seas.

When these explorations have been more extensively prosecuted, and their results elaborated, our geographical knowledge of these vast plains will be much improved.

The *north-west of Mongolia* has been mapped by M. Veniukoff from the itineraries of Russian travellers who have explored it of late years. Among these we will mention M. Printz, who went to Khebdoo in 1862; M. Schishmareff, who travelled from Urga to Uliasutai in 1868; and M. Matusoffsky, whose interesting journey in 1870, from the frontiers of Western Siberia to Khebdoo, and Uliasutai, and thence to the north, to the sources of the Yenissei, and to Minusinsk, is a valuable addition to our knowledge of a region hitherto almost unexplored. M. Veniukoff's researches demonstrate that the position of Khebdoo must be moved considerably to the east of the meridian $107^{\circ} 45'$ assigned to it by Klapproth in his map of Central Asia. Veniukoff proposes to place this town in the parallel of $48^{\circ} 7' N.$ lat., and in the meridian $109^{\circ} 18'$ long. E. of Ferro, thus altering its position 74 miles, as compared with Klapproth's map. The position of Lake Iko-Aral must also be rectified, as well as the axis of the chain Ektak-Altai, which in Klapproth's map forms too acute an angle with the meridian. The position, however, of Uliasutai appears to be quite correctly marked on the old map.

In Turkistan M. Schépeleff has explored the district of Kuldja, and has communicated some valuable information on its geographical position, local character, the different tribes which compose its population, and the mode in which they are distributed. He has also given an interesting description of his expedition across the Moudjart Pass in the Tian-Shan, from its northern slope to the outpost of Mazar Bacha, in the territory of Kashgar, near the *mer de glace* on the southern slope of the Thian Shan. A still more important journey, in this part of Asia, is that of M. Fedebencko, from June to August, 1871, to the northern part of the Pamir Steppe. A preliminary account of this exploration only has at present appeared, and in the Russian language, printed at Tashkend. Southward of Khodjend he describes the route as ascending a succession of terrace-like steppes, and the road thence led from Waruch, by the Hodja-Chiburgan Gorge, to the Chiptyk Pass, 12,000 feet above the sea-level. Peaks rose in the vicinity to a height estimated at between 18,000 and 19,000 feet, with immense glaciers, carrying lateral moraines, between them. This part of the mountainous region is described as excessively rugged and difficult to travel over.

The author regretted he was unable to reach Karategin, which at that time, owing to political causes, was inaccessible to travellers coming from Khokan.

A new map of Khokan has been made by M. Struve, from his recent astronomical observations. In China some enterprising Russian travellers have been engaged during the last year in exploring the upper valley of the Yellow River, under the auspices of the Imperial Geographical Society of St. Petersburg. After passing through Kalgan, and crossing the desert of Gobi, they entered the mountains of Suma-Khodo, about 80 miles north-west of the town of Kuku-khoto, and visited the country of the Urutes, the Ordos, and Alaschau, in south-eastern Mongolia. According to the last accounts they had returned to Peking for supplies of money and provisions, preparatory to another expedition, in which they hoped to penetrate to Kuku-nor.

Among the other scientific expeditions which have been organized by the Geographical Society at St. Petersburg, that of M. Paliakoff to the lacustrine region of the Government of Olonetz, between Lake Onega and the frontiers of the Government of Archangel, deserves to be noticed as of special interest to naturalists. Attention should also be directed to Baron Maydell's expedition to the country of the Tchuktehis, in Northern Siberia, as well as to the ethnological and statistical expedition to the western provinces of Russia and Russian Poland, under M. Tchubinsky.

We have recently received the first publication of the Caucasian Section of the Imperial Geographical Society of Russia, whose Secretary, M. Kowalevsky, informs us by letter that the Section has been established with the view of studying the geography of the Caucasus and its adjacent districts.

Manchuria.—A paper giving an account of a Journey in the Northern Provinces of Manchuria, by Mr. Thomas Adkins, Consul at Newchwang, was communicated to me, a few weeks ago, by Sir Rutherford Alcock, but I regret to say it cannot be published until a portion of the manuscript, lost through accident, is replaced by the author. The paper narrates the incidents of a journey made by Mr. Adkins, from the city of Kirin to Ningutá and other places east of the Sungari River, and describes, in a graphic manner, the many curious physical phenomena observable in that part of Manchuria. The Sungari, whose blue waters rival in hue those of the Lake of Geneva, is described by the author as a picturesque and magnificent stream, flowing through a richly-wooded country. As

is well known, this fine river, a southern tributary of the Amur, is navigable as far as Girin, by large vessels from 'the mouth of the Amur,' a Russian steamer having ascended it in 1859. The volcanic or lava region near the River Hurka, and the lake and waterfall formed by that stream, were also visited and described. It is to be hoped that the missing parts of this paper, which will form a valuable addition to our knowledge of Northern Manchuria, will be supplied by the author, so that we may be able to read it at one of our meetings during the next Session.

The Archimandrite Palladius, whose journey through Manchuria formed the subject of discussion at one of our meetings this year, and will appear *in extenso* in the next volume of the 'Journal,' has returned to Pekin by sea after visiting the ports on the seaboard of Russian Manchuria, and completing his researches on the archaeology and ethnology of that country.

AUSTRALIA.—First Discovery of Australia.—I have been informed by Mr. Major that, on the 14th March, he read before the Society of Antiquaries a paper entitled 'Further Facts in the History of the Early Discovery of Australia,' which, though antiquarian, is too important to the history of geography to be omitted from this record of the year's doings. In 1861, Mr. Major had made known, for the first time, through the medium of that Society, the fact that Australia had been discovered in 1601 by a Portuguese named Manoel Godinho de Eredia,—an announcement which made the date of the first *authenticated* discovery five years earlier than had been previously accepted in history, and transferred the honour of that discovery from Holland to Portugal. The only evidence of this fact which Mr. Major was able to adduce at the time, was a MS. map (and that not original), which stated that the discovery had been made under the orders of the Viceroy Ayres de Saldanha, but corroborated by a printed Portuguese document, which showed that the discoverer had really been engaged in similar explorations under the orders of the said Viceroy's predecessor. Quite recently, however, there has been found in the Royal Burgundian Library at Brussels, Eredia's original autograph report of this discovery to King Philip III., accompanied by views, charts, and portraits, which it is hoped that the Chevalier Portuguese Minister at Brussels will have an authorisation and credit from his Government to publish.

Meanwhile Mr. Major's researches had led to the disclosure of a

fact of equal, if not of greater, importance than this. In 1859, he had called attention, in his 'Early Voyages to Terra Australis,' to some half-dozen French MS. maps of the world—most of them in the British Museum—on which Australia was laid down at a very much earlier period than that just mentioned, but with no record of the name either of a discoverer or of a ship, nor any statement of the period at which the discovery was made. Some of these maps were undated, but the oldest written date was 1542. On the country representing Australia, named *Jave la Grande*, were names of rivers, capes, and bays, which Mr. Major, in common with others who had commented on these maps, had taken for Gallicized Portuguese, and hence inferred that the Portuguese were the discoverers. It so happened, however, that, about three months ago, an engraved map of the world, recently purchased by the British Museum, fell under Mr. Major's notice, on which, though in a very much vaguer manner, Australia appeared to be indicated under the name of *Regio Patalis*, while the map bore the remarkably early date of 1531. The map itself was made by Oronce Finé, a celebrated astronomer and mathematician, of Briançon, in Dauphiné. This remarkable circumstance that all the maps of the first half of the sixteenth century indicating Australia, proved to be French, while a magnificent Portuguese portulano, of the date of 1558, showed a perfectly blank space where Australia should be, led Mr. Major to the question, whether the names on the "*Jave la Grande*," which he had previously taken to be Portuguese, might in any way be French. Calling to mind that the whole of Southern France, from Gascony to Provence, was occupied by branches of the old *Langue Romane*, he consulted the dictionaries of these languages, and found that the inscriptions in question were Provençal. A further examination of the inscriptions confirmed the conclusion, while one of the maps—dedicated to Admiral Coligny in 1555, and now in the *Dépôt de la Guerre* in Paris—bore the name of a Provençal pilot, named *Guillanmo le Testu*, a native of Grasse. The logical deduction from this collection of evidence is that those who, in those early days, were alone able to lay down on maps a country which can be demonstrated from our present knowledge to be Australia, were the discoverers of that country, and that those discoverers were Frenchmen. The question then naturally arises, whether they could have had any predecessors in this field of discovery. Mr. Major's subsequent researches, which he has communicated to me, effectually remove this doubt. In

a letter addressed to Giuliano de' Medici by Andrea Corsali, a Florentine navigator in the Portuguese service, under date of May 6th, 1515, occurs the following passage:—"Eastward of Sumatra are the islands where grow cloves, nutmeg, and mace, lign-aloes and sandalwood; and still eastwards they say is the Land of the Pigmies, which, in the opinion of many, is connected southwards with the land of Verzino, which, from its great extent, is not yet at this part explored, but they say that to the westward it is connected with the Antilles of the King of Castile." The word "Verzino" undoubtedly means Brazil, and, as the language indicates, reference is here made to a vast continent supposed to surround the South Pole, taking its rise, on sixteenth-century maps, in the land immediately south of the Straits of Magellan; and Mr. Major is of opinion that this very sentence proves a knowledge of those straits more than six years before Magellan passed through them, and that the Pigmies are the Fuegians, whom we know to be the smallest and most degraded specimens of the human family. The portion of this great southern land referred to by Corsali is unquestionably New Guinea, for the north coasts only of the Spice Islands alluded to—viz. Java, Sumbawa, and Flores (the two latter discovered by the Portuguese in 1511)—were at that time known, and an eastward course thence would lead, not to Australia, but to New Guinea. Moreover, Gerard Mercator, in his great map of 1569, has lent the weight of his opinion to New Guinea having been heretofore referred to. It would be difficult to adduce any stronger proof than this that no exploration of Australia had at that time taken place; and if we recall the fact that, even so late as 1558, the Portuguese portulano of Diogo Homem takes no cognizance whatever of Australia, we must own that the French are without a rival in the field. Indeed, even if this important continent could be shown to have been sighted earlier by any other people, of which we possess no evidence, the merit of laying down the east and west coasts on maps as early, if not earlier, than 1542, is a fact of too practical a nature to be overlooked. It is not unreasonable to infer that Guillaume le Testu was himself engaged in some, at least, of the explorations on which these maps are based, (1) because Provençal names of localities are clearly to be ascribed to a Provençal discoverer; (2) because André Thenet, cosmographer to Henri II., boasts of having often sailed with Guillaume le Testu, and styles him a "*renommé pilote et singulier navigateur*;" (3) because one of the Capes on the West Coast of the "Jave la Grande" of the French maps is named "Cap

de Grace"—without doubt so named from the birthplace of this navigator, who on his own map styles himself, "de la ville Francoyse de Grace." It only remains for us to hope that, like as the original autograph confirmation of that first Portuguese discovery which, after the lapse of 260 years Mr. Major was the first to make known, has at length come to light, so we may some day have the pleasure of reading the original narrative of that yet earlier discovery by the French, of which the French themselves are as yet unaware, with which his researches have now made us acquainted.

Telegraph-line across Australia.—Since the last Address, in which the commencement of the great work of laying a line of telegraph across Australia, from Adelaide to Port Darwin, was mentioned by my predecessor, the operations of the engineers and surveyors have made much progress, without, however, bringing the undertaking to a conclusion. I have lately received from the Colonial Office a copy of a Report by Mr. Todd, the Superintendent of the Telegraph, dated from Roper River, in the Northern Territory, the 16th of February last, in which an account is given of the efforts that were then being made to complete the line, over the space some two hundred miles in length, not at the northern end, but in the interior towards the head of the Roper, between 200 and 300 miles south of Port Darwin, which is still wanting to bring the cities of our great Southern Colonies into direct telegraphic communication with Europe. The surveying operations incident on the progress of this work have already led to geographical explorations of no little importance; the most interesting of which is the ascent of the River Roper by the vessels carrying the material and supplies to the working parties, and which has proved this stream, disemboguing on the western shore of the Gulf of Carpentaria, to be a navigable river. The ascent of the river by two steamers to a distance of 100 miles, is narrated in Mr. Todd's Report, and it is stated that vessels drawing 12 or 14 feet of water can easily go up to that distance, 3 to 9 fathoms' depth being always found, except in a few wide reaches where the channel could be easily deepened. The general width of the river for the first 50 miles is from 400 to 500 yards, and it is bordered by a wide tract of alluvial land, subject, however, to inundations.

New Guinea.—Intelligence has been received from time to time, within the last few years, which affords some ground for the belief that the Papuans of New Guinea are not so incorrigibly hostile to white men as they have generally been supposed to be. At any rate this seems to be the case with regard to the inhabitants of the

Southern Coast, in the neighbourhood of Torres Straits, trading-vessels from our Australian colonies having occasionally landed at different points on this coast and having met with the most friendly treatment on the part of the natives. My predecessor had occasion to record the visits of Captain Delargy and Lieutenant Chester to this part of the great island, both of which gentlemen spoke of the friendly demeanour of the natives, when treated properly and approached under suitable precautions. Since then, Sir Charles Nicholson, who has for a long time past advocated the geographical exploration of New Guinea, placed in my hands a short account, which he had found in an Australian newspaper, of another amicable reception of a trader on the same part of the coast.

Whilst these desultory visits were being paid to the southern side of New Guinea, a Russian *sarant*, M. Miklonka Maclay, has been quietly pursuing his investigations on the northern coast in Astrolabe Bay. At least it is supposed that he has been so occupied, for no news has been received from him for some time past, and the anxiety of his colleagues in St. Petersburg has been such, that Admiral Lutke, in March last, addressed me, on the part of the Imperial Academy of Sciences, with a view to obtaining the good offices of our Society, in ascertaining the safety of the too-adventurous explorer. It was stated that M. Maclay had been deposited, with his two servants, well furnished with provisions, arms, and ammunition, in Astrolabe Bay, by a Russian corvette, about a year previously, and that nothing had since been heard of him. On the receipt of Admiral Lutke's letter, it afforded me much gratification to carry out his wishes, in so far as to address the Governors of New South Wales and Queensland, requesting them to recommend the masters of any vessels which might be leaving the ports of those colonies for the neighbourhood of New Guinea, to make inquiries, and, if possible, to find and assist M. Maclay.

Borneo.—A very interesting paper on the interior of the northern part of this little-known island has been read during the session, from the pen of our Associate, Lieutenant De Crespigny, who has been long resident in Northern Borneo, and whose familiarity with the languages and customs of the natives and knowledge of Natural History render all that he communicates well deserving of attention. The paper I now allude to describes the Padass River, and the Muruts and other tribes of indigenes inhabiting its banks. The Padass, and several other streams, more or less parallel, running south and west, take their rise on the slopes of Mount Kinibalu, and

flow through a fertile plain. Many original observations on the orang-utan and on the botanical productions of the region are given, besides vocabularies of five of the native languages. In a recent letter Lieutenant De Crespigny offers himself to explore the interior of New Guinea, under the auspices of the Society.

Formosa.—Our knowledge of the savage interior of this interesting island is gradually although slowly increasing. In former years Censul Swinhoe contributed a paper on its geography and ethnology, and since then Dr. Collingwood has published an account of a journey across a portion of the interior. But the descriptions of these able naturalist travellers related almost exclusively to the northern and more accessible part of the island. In the last number of our 'Proceedings' will be found an account of 'A Visit to Tok-e-Tok, Chief of the Eighteen Tribes,' by Mr. T. F. Hughes, of the Chinese Customs, which gives us much information regarding Southern Formosa. The aborigines of the southern part of the island had hitherto possessed an evil reputation for their barbarous treatment of the crews of vessels shipwrecked on their coast; but, according to Mr. Hughes, whose mission was in connection with a disaster of this kind, and who happily recovered the crew uninjured, the savages are always ready to meet kindness with kindness, and he and his party were received with great hospitality. Judging from some observations given by Mr. Hughes on the climate of Formosa, this island enjoys a great advantage over the opposite mainland of China. During the north-east monsoon, from October to May, the temperature is similar to that of Italy and the south of France, and the heat during the south-west monsoon is far from being so great as that of any part of the Chinese coast south of Tientsin.

Japan.—Our Medalist, Captain Blakiston, has added to his geographical reputation by his recent journey round the island of Yezo, an account of which was read by Sir Harry Parkes at our meeting of the 12th February last. During this journey Captain Blakiston gathered a large amount of information regarding the inhabitants, productions, and resources of this interesting and little-known island. Having been long resident at Hakodadi, the chief Japanese settlement in Yezo, situated in the extreme south, he was well qualified for this undertaking, and he had besides the advantage of travelling as a Japanese official. He went by ship to Hamanaka, on the south-eastern coast, and disembarking there with his servant on the 6th of October, 1870, journeyed by land round the shore, completing the tour of the island, a distance of 895 miles, by the 29th of November,

and finding hospitality at the *Quaishos*, or Japanese trading and fishing stations, which are met with at intervals throughout the coast country. The aboriginal population of Yezo, as is well known, consists of the singular race of hairy men, called Ainos, concerning whom Captain Blakiston gives some interesting details. Their total number, however, is estimated at 25,000, which is but a small population for an island somewhat larger than Ireland. The resident Japanese number some 120,000 souls. The whole interior of the island is very scantily peopled and but little known, even to the Japanese. At present this large island is profitable to the Japanese only from its fisheries; but the southern and western parts are rich in mineral productions—gold, silver, lead, iron, petroleum, and coal—so that a more prosperous future may safely be anticipated for this extreme northern part of the Japanese empire.

Until recently the coasts of Yezo had never been properly surveyed, and the form and position of its eastern and northern shores, as shown on our maps, were quite erroneous. A survey, conducted in 1871 by Commander H. C. St. John, in H.M.S. *Syleia*, has remedied this defect, and the Admiralty charts of the island will in future give its coast-line accurately. Commander St. John's Report to the Hydrographer contains also some interesting particulars relative to the inhabitants, productions, and climate of Yezo, and will be published in our 'Journal.'

SOUTH AMERICA.—In the last Annual Address mention was made of an important contribution to our knowledge of the rapids and cataracts of the River Madeira, resulting from the labours of Messrs. Joseph and Francis Keller, engineers in the service of the Government of Brazil. These obstructions, extending for nearly 230 miles along the course of this river, have hitherto operated as a check to intercourse along this grand stream, which would otherwise form the main artery of communication between the Atlantic coast and Bolivia by way of the Amazons. The importance of this river to the rich territory of the Bolivian Republic will be readily comprehended when it is considered that, unlike Peru, the great bulk of the population is located in the interior of the country, on the head-waters of the streams which flow on the one hand towards the Amazons, and on the other towards the Plata, and is separated from the Pacific coasts by a broad tract of desert and mountains. Water-communication by way of the Amazons with the Atlantic, and with Europe, has become a necessity to the development of the

resources of the country. The Bolivian Government have, therefore, in co-operation with that of Brazil, whose western provinces would also be greatly benefited by the opening of the Madeira, decided on making a vigorous attempt to overcome these obstacles, and have conceded to a Company organized by one of our associates, Colonel G. E. Church, the right and privileges of constructing a railway which shall connect the lower course of the river with the long stretch of navigable stream above the rapids, and which will thus remove the only obstacle to the utilization of a natural commercial route nearly 3000 miles in length, from the mouth of the Amazons to the upper waters of the tributaries of the Madeira at the eastern foot of the Andes. According to a statement published by Colonel Church, the successful carrying out of this scheme would bring two millions of people—that is, four-fifths of the entire population of the Amazon basin, with all the vegetable and mineral wealth of their country—within easy reach of Europe, from which they are at present separated by the Andes and by the circumnavigation of Cape Horn. To us, as Geographers, this project is one of great interest, not only from the direct contribution to our knowledge which the surveys connected with the railway are sure to afford, but from the prospect held out of the exploration of the Beni and other little-known tributaries which flow through this region from the Andean region of South Peru and Northern Bolivia. It is gratifying to learn that the first two steamers, carrying the staff of engineers and mechanics, and a large portion of the material, left England in April last for the Madeira, *via* Pará and the Amazons.

We are indebted to our Medalist, Mr. William Chandless, for a document of considerable value and utility to travellers in this part of South America, as well as to Geographers. This is a "List of Geographical Positions in the Valley of the Amazons," compiled by Mr. J. H. Rochelle, of the Peruvian Hydrographic Commission. It gives the exact position of a large number of places, from observations taken chiefly by officers in the Peruvian service and not yet published, at least in an accessible form. It will be published in the "Additional Notices" in the current number of our 'Proceedings.'

Mr. C. B. Brown, of the Geological Survey of British Guiana, whose paper on his discovery of the magnificent waterfall of Kaieteur, in the interior of that colony, attracted considerable attention last Session, has since then continued his exploration with good results, and is now returned for a short period of repose to England. The greater part of the wild region traversed by Mr.

Brown is known to us by the explorations of Sir Robert Schomburgk, but many important parts were left untouched by that distinguished traveller which Mr. Brown has been able to examine. For example, the head-waters of the Corentyn and Essequibo rivers, and the line of watershed lying east and west which separates the Guiana drainage from that of the Amazons. Mr. Brown devoted seven months to this exploration, from September, 1871, to March, 1872. Ascending the Corentyn to the southern frontier of the colony, he followed the boundary line over the American mountains to the Essequibo, returned thence again to the Corentyn, and descended the river to the sea. He afterwards ascended the Berbice River nearly to its source, and crossed from there to the upper waters of the Demerara. The most important result of these explorations is the ascertained low altitude of the watershed. In the place where on our best maps we find a formidable-looking mountain range under the names of Sierra Acarai and Sierra Tunuraque, Mr. Brown walked with his party of six men over an undulating country, elevated only 600 to 700 feet above the sea-level, and met with no other obstacle than dense forest and swampy ground. The highest hill observed was only 1240 feet above the sea; this he ascended, and obtained from its summit an extensive view over the hilly country to the south. He fully satisfied himself that there was no definite range along the line of watershed.

ARCTIC EXPLORATION.—During last summer the reconnaissance of the sea between Spitzbergen and Novaya Zemlya, by Lieutenants Payer and Weyprecht, which Sir Roderick Murchison referred to in his last Address, was accomplished, under the auspices of the Austrian Government. The object of these enterprising explorers was to follow the supposed Gulf-stream into the Polar Basin, by keeping nearer the coast of Novaya Zemlya than had been done in the attempt of Koldewey in 1868. They sailed from Tromsø, in Norway, on the 21st of June, 1871, in a small vessel of 70 tons, with a crew, all included, of eight souls. Having failed in an attempt to approach Gillis Land by way of Stor Fiord, they tried another route by following the eastern coast of the outermost islands of the Spitzbergen group, and on the 29th of August they had reached $77^{\circ} 30' \text{ N.}$, on the meridian of 42° E. , where the vicinity of land was indicated by the decreasing depth of the sea and the numerous bear-tracks on the ice; but thick fogs appear to have

constantly obscured their view. Hitherto they had been beating about in navigable ice; but on the night of the 30th, in latitude 78° N., they struck upon the ice-edge, on the meridian of $41^{\circ} 30'$ E. In the evening of the 31st they were in latitude $78^{\circ} 41'$ N., amongst ice which seemed to be moving to the north-east. Here their progress was stopped by thick fog and a stiff contrary wind; and many signs, such as fresh mud and sea-weed, led them to infer the near neighbourhood of land. These observations seem to lead to the conclusion that the land, called Gillis, or King Charles Land, to the eastward of the Spitzbergen group, is of considerable extent.

Having thus reached their most northern point, the explorers then stood towards the coast of Novaya Zemlya, and on the 6th of September, in latitude $78^{\circ} 5'$ N. on the 56th meridian, they met ice, with a heavy sea beating upon it. Thence they struggled homeward, against continual storms from the south-west, and anchored in Tromsø again on the 4th of October.

During the same summer Mr. Smith, an English yachtsman, attained an unusually high latitude, within a few miles of that of Scoresby, by sailing up the western side of Spitzbergen.

Lieutenant Payer, encouraged by the comparative success of his summer cruise, is fitting out a second Austrian expedition on a more efficient scale, with the intention of rounding the northern point of Novaya Zemlya, and making his way along the coast of Siberia. It is not at all impossible that, by dint of perseverance and good fortune, this gallant officer may meet with that measure of success which his undaunted efforts so well merit; and all English geographers will wish his expedition a hearty God-speed.

A very remarkable voyage was also made, in the summer and autumn of 1871, by a Norwegian captain, named Elling Carlsen who succeeded in circumnavigating Novaya Zemlya. He sailed from Hammerfest on the 16th of May, in a sloop of 60 tons, with a crew of 11 men, and made his way up the western side of Novaya Zemlya until he reached the north-eastern extreme of that extensive group. He anchored in Ice-haven on the 7th of September, and discovered a house built of ship's timbers, standing at the head of the bay, about 100 yards from the water. It was 32 feet long by 20 broad, and several large puncheons were standing round it, which fell to pieces when Captain Carlsen attempted to remove them. This strange old building turned out to be the house erected by that famous Dutch navigator Barrents and his shipwrecked crew, well-nigh three centuries ago. The number of curious articles it con-

tained, proved, beyond any doubt, that the place had not been visited since Barrents and his men left it in two open boats on the 14th of June, 1596. The brave old commander died in his boat on the 19th, and, like La Peyrouse and Franklin, he found a grave in the midst of his discoveries; but 12 survivors, including Gerrit de Veer, the second mate and historian of the expedition, lived to return to Holland and to tell their story to the Prince of Orange and the Danish Ambassador, after a grand dinner. The Norwegian captain must have entered the strange house, which had stood for 276 years in profound solitude, with feelings of intense curiosity and interest; and he discovered and brought home a number of precious relics. Mr. Lister Kay, a young English gentleman, who was at Hammerfest, on his way to Lapland, when Captain Carlsen returned, purchased the collection, in the belief that his Government would be eager to acquire it. This, however, proved not to be the case; but the Netherlands Government have since purchased the collection from Mr. Lister Kay, and the relics will find a suitable resting-place in the native land of William Barrents. Among them are copper cooking-utensils; gun-barrels, one of them square externally; carpenter's tools; a clock; spoons; a tankard; fragments of engravings; three books in Dutch, one on navigation, another a history of China, and a third a history of the world; candlesticks; a sword; a halberd-head; and a pitcher of Etruscan shape, beautifully chased. It is seldom that so interesting a recovery of relics has been effected, and the high reputation of the ancient Dutch navigator enhances the interest which attaches to them. The voyage of Barrents has been published by the Hakluyt Society, and many of the relics brought home by Mr. Lister Kay will actually be found represented in the curious illustrations of Gerrit de Veer.

Barrents reached Ice-haven on the 26th of August, and "here they were forced, in great cold, poverty, misery, and grief, to stay all the winter." Carlsen narrowly escaped a similar fate, as he slowly made his way down the eastern side of Novaya Zemlya. Once a gale from the south-west drove him back into the Ice-haven of Barrents, and for several days he was much impeded by the ice. On the 21st of September he was beset, and, as it was freezing hard, he made preparations to abandon the ship; but, providentially, he got into some open water on the 30th. On the 6th of October he passed through the Waigat Strait, and reached Hammerfest on November 4th, 1871, having accomplished the most remarkable

voyage in that direction since the time of Barrents. In 1595 south-westerly gales drove the ice off the shore, towards the end of September; and Carlsen mentions exactly the same thing as having happened in September, 1871. Other observations of the old Dutch navigators are confirmed by the experiences of our Norwegian captain; but Carlsen's chart shortens the distance between Cape Nassau and Ice-haven, and thus considerably alters the shape of north-eastern Novaya Zemlya. We may expect further light to be thrown on the geography of this region by the researches of Lient. Payer during the present year.

I am also able to announce that Sweden is preparing a new Polar expedition, which will sail from Gothenburg this summer, and has been fitted out through the noble liberality of the inhabitants of that town. The veteran Arctic explorer, Professor Nordenskiöld, will be at the head of the expedition, which consists of two vessels, supplied by the Swedish Government—the steamer *Polhem*, and a brig, called the *Gladan*. The brig will return in the autumn, but the steamer will be away until the autumn of 1873, and she takes out a wooden house, consisting of seven rooms and a kitchen, and reindeer for the sledges. During the autumn the intention is to explore the land to the eastward of Spitzbergen, which has so often been sighted, but never landed upon; and in the winter of 1872-73, with the help of reindeer, they will make a bold attempt to reach the North Pole, by travelling over the ice. Professor Nordenskiöld is a veteran, for this is his sixth Arctic voyage; and he has proved himself to be an able and resolute explorer. His companions have been carefully selected, so that very important results may be confidently anticipated from the labours of these hardy Northmen. The old heroic literature of Scandinavia is closely connected with Arctic research; and we cannot fail to rejoice at the place which the descendants of Othar and of Eirec Raude are so worthily taking among the explorers of the North Polar regions.

But England should do something more than look on and applaud, while others work. The numerous Arctic expeditions and cruises undertaken by Swedes, Norwegians, North Germans, Austrians, and Americans during the last seven years, have kept the attention of geographers steadily turned to the problems which remain to be solved within the unknown region surrounding the Northern Pole. The results of these efforts have all tended to confirm previous experience, and thus to secure that amount of unanimity with regard to the method of solving those interesting problems, which

was necessary before the exploration of the North Polar region could again be advocated in England, with any prospect of success. In the opinion of Arctic officers, and of others best able to form a correct judgment, the time for urging a renewal of these enterprises, which form so proud a page in our history, has now arrived; and when Captain Sherard Osborn addressed a meeting of our Society on this subject, on the 22nd of April, his views were warmly supported, not only by the leading naval officers of Arctic experience, but also by men of science, such as Dr. Hooker and Dr. Carpenter, who know well the vast importance of the results to be achieved by Arctic exploration.

The Council have, therefore, adopted a Report on this subject, which has been drawn up by an Arctic Committee; and they feel that the opinion unanimously expressed by the highest authorities on such a question must carry great weight. The conclusions of the Council are based on the following considerations. The unknown region covers an area of more than a million square miles. It is obvious that a single expedition cannot undertake to explore this space. It is therefore necessary to select that portion of it for exploration which offers the three advantages that are considered essential. These are:—1st. The greatest certainty of exploring a previously unknown area of considerable extent. 2nd. The prospect of the most valuable discoveries in various branches of science. 3rd. The best security for a safe return. These advantages can only be secured in that portion where a coast-line of great extent is known to exist, because the most valuable discoveries must be made on or near the land.

The unknown coast of Greenland intervenes between a point in about 82° N. lat. on the west side, and a point in 77° N. lat. on the east side; and at both points, which are 600 miles apart, the land trends north. There is no other land offering similar conditions on the verge of the unknown area. The object of an English Arctic Expedition should, therefore, be to explore the unknown shores to the north of Greenland; and in order to reach the point whence discovery would commence, such an expedition must proceed up the west coast of Greenland, in Baffin Bay and Smith Sound. This route is preferable to one by the east coast of Greenland, because of the facilities for retreat to the Danish settlements.

Such an expedition should consist of two screw steamers, one to be stationed within the entrance of Smith Sound, the other to advance as far as possible to the northward (preserving communi-

cation with the depôt vessel), from which point sledge-parties would start in the early spring, and explore the unknown region in various directions. The advanced parties would be in such a position as to be able to fall back upon the consort at her station within the entrance of Smith Sound. Thence, in the event of an improbable accident, the whole expedition could retreat, without difficulty, to the nearest Danish settlement in Greenland, as has before been done. Thus two advantages—the certainty of discovering a wide extent of coast-line, and the security for a safe return—are ensured by adopting this course. They could not be secured by taking any other route.

The discovery of the northern side of Greenland also offers the second advantage—the prospect of securing the most valuable results in the various branches of scientific research. A geographical problem of great importance and interest will be solved by completing the circuit of Greenland, ascertaining the extent and nature of its northern shores, and discovering the conditions of land and sea in that portion of the unknown area. An Arctic Expedition, as a supplement to the expedition now preparing to investigate the ocean-bottom in the middle and southern latitudes of the globe, is a scientific necessity; and Dr. Carpenter considers that there is no better sphere for its labours than the northern Greenland seas. In botany, in zoology, in ethnology, and in geology, there are discoveries of the first importance to be made in the unknown region, some of which were enumerated by Dr. Hooker in his remarkable address at our meeting on April 22nd; and valuable contributions will also be made to geology and meteorology. It should also be remembered that the exploration of an unknown region, will necessarily bring to light a number of important facts in every branch of science, which cannot possibly be foreseen.

In addition to the harvest of results with which Arctic discovery will enrich science, there are other considerations to which great weight must be attached. Another generation of naval officers will be trained in ice-navigation, a much-needed field will be opened for individual enterprise, opportunities will be offered for distinction, and a great benefit will thus be conferred upon the navy, and, through the navy, on the country generally.

AFRICA.—*Sir Samuel Baker*.—An interesting letter which was addressed to the Prince of Wales by Sir Samuel Baker during the autumn, and which, by His Royal Highness's order, was communi-

cated to our Society, has supplied us with full information as to the progress of the Upper Nile Expedition as late as the 22nd of last October. At that date our valued correspondent, in whose welfare we are so greatly interested, after overcoming the most extraordinary difficulties in cutting a way for his vessels through the forest of reeds which now fill the bed of the Bahr-el-Giraffe, had succeeded in reaching a point 20 miles in advance of Gondokoro. His force had become a good deal disorganized owing to a shortness of supplies and a pestilential climate, added to the hardships to which they were exposed in dragging the flotilla through the shallows and marshes of the Bahr-el-Giraffe; but since they had again reached the navigable bed of the Nile and were quartered in the fertile country of the Báris, the men seem to have pretty well recovered their health and discipline, and the prospects of the expedition had assumed a more favourable appearance. The Khedivé, too, as I am informed by travellers who have lately returned from Egypt, and on whose statements I can depend, has not by any means lost his interest in the success of the expedition. Faithful to the promises which he made to H.R.H. the Prince of Wales, he is making every effort to support Sir S. Baker, and has thus organized a recruiting depôt at Khartoom for the purpose of supplying soldiers of the country, thoroughly acclimatized, to repair the losses that have been sustained, and restore the expedition to its former state of efficiency. It is hoped and expected that when Sir S. Baker receives these reinforcements, he will be able completely to overawe the rebellious Báris, and will then push on for the Albert Nyanza, in order to launch his steamers on this great inland sea and explore its southern extremity. In the mean time, however, the communication between Khartoom and Gondokoro seems to be interrupted, and Sir S. Baker has warned us that he will not be able to send further despatches to Lower Egypt till near the close of the year. I may add that the Upper Nile is likely ere long to be brought into the general round of Oriental travel, as a Railway is being now laid down by English Engineers along the river to Khartoom, which when completed—and the Khedivé is pushing it forward with the greatest activity—will render Nubia as accessible to tourists as Egypt has hitherto been.*

* The important additions to our knowledge of the region west of the Upper White Nile, made by Dr. Schweinfurth, were noticed in the last year's Address, but I think it necessary to call attention here to the testimony borne by this traveller to the value of Mr. Petherick's observations in his journey of 1862 *via* Neangara; the astronomical positions fixed by our English traveller having served

Lake Region and South-Eastern Africa.—In the mean time the Geography of the Equatorial Lakes has received some valuable illustration from the investigations of Captain Burton and Mr. Keith Johnston, who have sifted the evidence on which the Victoria Nyanza retains its position in the Map of Africa as a single and undivided body of water; and have certainly succeeded—by means of the native routes collected by Mr. Wakefield, and published in our last 'Journal'—in throwing considerable doubts on this received delineation, which nevertheless is maintained with unflinching faith by Colonel Grant, the only living European traveller who has ever seen the waters of the Lake.

And here I cannot help again drawing attention to the signal service rendered to the cause of African Geography by Mr. Keith Johnston, who, in a brief but pregnant pamphlet, entitled 'A Map of the Lake Region of Eastern Africa,' and published in 1870, brought together all the information regarding the interior of the continent and the various water-systems which it embraces, that could be gathered from the little-known travels of Lacerda, the Pombeiros, Graça, Ladislaus Magyar, Silva Porto, Piaggia, and the Poncets, as compared with the discoveries of our own explorers, Livingstone, Burton, Speke and Grant, and Baker, and with the route-tracks and researches of the German travellers, Roseher, Krapf and Rebmann, Von der Decken, Brenner, Schweinfurth, and Mauch. To the last-named gentlemen the Council, as you have been already informed, have awarded an honorarium of 25*l.* for his successful exploration of South-Eastern Africa, where, between the Limpopo and Zambesi, he has discovered the ruins of an extensive city, which, without adopting the fantastic notion of an identification with the Biblical Ophir, we must at any rate admit to indicate a degree of populousness and civilization far superior to anything known in the modern history of the region.

The successful ascent of Kilima Njaro by the Rev. Charles New, in the course of last autumn, and his discovery of the Lake Chala at the north-eastern foot of the mountain, require also to be briefly noticed. Mr. New is the first traveller who has actually reached the snow-limit on this culminating point of the African Alps, and he is the first who has brought back any specimens of the flora of this interesting region. His letter describing and classifying seven dis-

Dr. Schweinfurth as landmarks, and thus enabled him to furnish materials for an outline map of the country.—See Petermann's 'Geographische Mittheilungen,' 1871, p. 133.

tinct zones, according to altitude, physical character, and vegetable products, as he ascended from the tropical district of Chagga, with its plantations of banana, plantain, and maize, to the region of eternal snow at the summit of the mountain, was listened to with great interest and attention at one of our recent evening meetings; and we may hope that he will some day favour us, *vis à vis*, with a more detailed account of his journey from Itibe to Teita and Chagga. At present it is understood that Mr. New, whose African experience and acquaintance with the dialects, render him a most valuable auxiliary, has joined the Livingstone party at Zanzibar, the requisite permission to this effect having been obtained from the United Methodist Free Church Missionary Society (to which establishment Mr. New belongs) by the Livingstone Committee when they were organizing Lieutenant Dawson's Expedition at the beginning of the year.

Nor must I omit to bear witness in this brief notice of African discovery, to the great value of Captain Elton's exploration of the Limpopo. Constructing a boat at the Tati settlement, and carrying it overland some 250 miles, Captain Elton launched it on the Limpopo at the junction of the Shasha stream. From thence he descended about 400 miles by the river to the junction of the Lipalule, and thus connected his exploration with the work of Mr. St. Vincent Erskine, who had already traced the Limpopo from this point to the sea, proving it to be the river laid down in Captain Owen's chart as the Inhampura. From the affluence of the Lipalule, where Captain Elton quitted the Limpopo, he struck across a rarely visited country, to the Portuguese settlement of Lorenzo Marques in Delagoa Bay, thus completing a journey of nearly 1000 miles in fifty-two marching days.

Old Calabar.—Turning to the Western Coast of Africa, the only exploration of importance which has been brought to our notice during the year is that of the Old Calabar and Cross rivers, east of the mouths of the Niger, by our enterprising and intelligent associate, Captain J. B. Walker. Captain Walker, who resides on this part of the West African Coast, employs himself during his journeys in the interior in surveying the courses of the numerous streams, and in investigating the productions of the country. A descriptive paper from his pen is published in No. 2 of vol. xvi. of our 'Proceedings;' but his charts, executed on a large scale, have been transferred to the Hydrographic Department of the Admiralty and incorporated on a reduced scale, in the new issue of the official chart of that part

of the coast. Since then we have been informed by Captain Walker that he has mapped the middle and western branches of the Cross and Old Calabar rivers, which had never before been explored by a European, and he promises to send his charts for the use of the Society. Missionaries belonging to the United Presbyterian Church have been established in this remote part of the West African Coast for the past twenty-five years, but the almost insuperable difficulty of penetrating more than a few miles beyond the narrow bounds of the mission stations, has hitherto prevented them from adding much to our knowledge of the country. The more welcome, therefore, is an account of the geography and tribes, by Dr. Robb, the first part of which has been recently published in the 'Missionary Record' for March, 1872, and which gives a clear idea of the ethnology of the region. The views of the founders of this mission, we are informed, were to aid in opening the way to the populous and salubrious districts in the vicinity of the Niger and the Tchadda; but after twenty-five years of efforts, it is confessed that the missionaries remain as ignorant of the region stretching between those two great rivers, and the mountains, visible in clear weather from the most inland stations, as they were a quarter of a century ago. The enterprises of the Rev. Dr. Robb seem, however, to have met with a certain amount of success, and there appears to be now some chance of opening up a route to Central Africa, by way of Old Calabar and the Efik territory, instead of by the pestiferous Delta of the Niger; though if it be true that the Doctor has been compelled, as reported, by the state of his health to leave the country for a time and seek the invigorating English climate, some delay may take place before this great object can be effected.

Dr. LIVINGSTONE.—I have reserved for the concluding portion of my Address a narrative of our proceedings in regard to Livingstone. When Sir Roderick Murchison, in May of last year, composed his farewell Anniversary Address to you, it was merely known that Dr. Livingstone, late in the year 1869, had crossed Tanganyika Lake from Ujiji, and had gone to the so-called cannibal country of Manyema, for the purpose of ascertaining the direction and ultimate distribution of the waters which he had been tracing up from their source in about 12° of south latitude. There were reports, however, which had come to Zanzibar from Unyanyembe, that, in the spring of 1870, Livingstone had returned, or was about to return, from Manyema to Ujiji, to which latter place

Mr. Churchill and Dr. Kirk had, in the mean time, succeeded in sending a considerable amount of stores and supplies, under directions from, and at the expense of, the Foreign Office. In allusion to these reports, Sir Roderick congratulated the Society, at the Meeting referred to, on the possibility of Livingstone's return to England within the year; but, at the same time, he warned us against being too sanguine, repeating his own belief that the great traveller would not turn his steps homeward until "he had solved the problem of the true watershed of Southern Africa."

When, a few months afterwards (November 18th, 1871), I delivered my brief Address to you at the opening of the present Session, we were without any further direct accounts of Livingstone's movements; but I had learnt in the mean time that an American gentleman, of the name of Stanley, had passed up from the coast at Bagamoyo into the interior, with a view of communicating with, and, if necessary, relieving, the great English traveller. There was a certain vagueness at the outset about Mr. Stanley's object and resources which was exceedingly puzzling. I ventured myself to put the most natural "English" construction on his movements, and suggested accordingly that "he was actuated by a mere spirit of adventure and discovery." Somewhat later I ascertained that he was not a simple tourist, nor even an explorer, in the usual sense of the term, but that he had been sent out by our Transatlantic consins, among whom the science of advertising has reached a far higher stage of development than in this benighted country, for the purpose of "interviewing" Livingstone, and communicating intelligence of his whereabouts to the 'New York Herald,' one of the most energetic, as it is the most popular, of the American newspapers. It is highly complimentary, I think, to our geographical reputation, while, at the same time, it bears testimony to the extraordinary spirit of enterprise which animates the leaders of the American press, and to the magnitude and importance of the interests they control, that the proprietors of a New York newspaper should thus send out an experienced Commissioner, with a *carte-blanche* as to expense, to lead an expedition into Central Africa, in order to gain information regarding Livingstone for the edification of the American public. It is, at the same time, no disparagement to Mr. Stanley's personal activity and energy, nor to his singular aptitude for African travel, that his mission should thus prove to have been of a practical and utilitarian character, instead of being conducted for

scientific objects, or in a mere spirit of purposeless adventure, as I had at first supposed.

So long as all went well with Mr. Stanley—and for some time all did go well—we were content to await the results of his adventurous journey. He reached Unyanyembe, half-way between Zanzibar and Tanganyika, about this time last year, and was pushing on for Ujiji, when local troubles intervened. Unyanyembe is inhabited by an Arab colony, who, in the interests of the ivory-trade, keep up the communication between the sea-coast and the interior; but these Arabs, who are overbearing and high-handed, often fall out with the natives of the neighbourhood; and, on this occasion, a serious conflict occurred between the two parties just at the period of Mr. Stanley's passage. Unfortunately, too, the men composing his escort were drawn into the quarrel. Four of them were killed; his own baggage and supplies were plundered, and his further progress seemed to be indefinitely arrested. When this crushing intelligence reached England in December last, not only compelling us to abandon any immediate prospect of communicating with Livingstone, but also threatening us with a loss of the supplementary supplies that were *en route* for Ujiji at the time of the outbreak, it appeared to us of the first necessity that active measures should be adopted to repair the disaster. Forming ourselves accordingly, into a Livingstone Committee, we entered at once into correspondence with Her Majesty's Treasury and the Foreign Office, with a view to the organization of a fresh expedition, which should penetrate with stores into the interior of the country, and thus afford relief to Livingstone in the event of the Ujiji supplies being exhausted, and those which were sent up afterwards by Dr. Kirk being plundered or destroyed in transit. Our application to the Government was not altogether ineffectual; for although the Treasury declined any direct pecuniary aid, on the ground, as afterwards explained in Parliament, that national interests were not concerned in the movement, the Foreign Office, on the other hand, entered warmly into our views, placing at our disposal the balance of the old grant, amounting to about 600*l.*, which remained in the hands of Dr. Kirk, and furnishing us with recommendations and credentials of the most satisfactory character. We now came forward and addressed the country. The objects of the expedition, which were principally (but not exclusively, for we also contemplated the extension of geographical knowledge) to afford effectual relief to Livingstone, were duly explained by advertisement in the daily

papers. Public meetings were held in London, Glasgow, Edinburgh, and other cities. I had the honour of frequently consulting the Fellows at our evening meetings as to the arrangements in progress, and the best method of giving effect to their wishes, eliciting on all such occasions marks of your unqualified approbation of our proceedings, and of your cordial interest in the success of the project. It soon, indeed, became apparent that the Livingstone Search and Relief Expedition would not languish for want of support. Subscriptions came pouring in from all quarters. The Royal Geographical Society headed the list with a contribution of 500*l.*; Glasgow followed with 1000*l.*; Edinburgh has since sent 700*l.*, and the small town of Hamilton, the dwelling-place of the Livingstone family, has even presented us with 200*l.* The city of London, too, has given us a hundred guineas; and contributions of a nearly equal amount have come in from well-wishers in Sweden, in Italy, in Egypt, and in India.* In all quarters, indeed, we have met with the most generous sympathy, and the result has been that our Subscription List now shows an aggregate of over 5000*l.*, exclusive of the Government balance at Zanzibar.

As soon as we had sufficiently felt our way and found that we might rely on public support, we accepted, out of a host of volunteer offers, the tender of the services of two young and accomplished officers of the Royal Navy, Lieuts. Llewellyn Dawson and Henn—with whom Mr. Oswald Livingstone, a son of the traveller, was afterwards associated in a quasi-medical capacity—and we proceeded at once to equip the expedition and furnish it with full instructions. Fortunately at this juncture the first steamer which ever made the direct voyage from London to Zanzibar, through the Suez Canal, was about to leave the docks. The proprietors offered us accommodation on very favourable terms, and the Admiralty having in the mean time supplied us with a full equipment of arms, the whole party accordingly embarked for its destination on February 9, 1872, within two months of the time when the idea of sending forth such

* The following donations merit special acknowledgment:

	£		£
Sir T. Fowell Buxton	200	African Association	105
The Duke of Sutherland	100	Henry Hoare, Esq.	100
His Excellency Count Platen, of		Mr. Cowasji Jehangir Ready-	
Sweden	100	money	100
J. Young, Esq.	100	J. N. Mappin, of Sheffield ..	100
Colonel Grant	100	Court of Common Council of the	
Baroness Burdett Coutts	100	City of London	105

an expedition, in consequence of Mr. Stanley's reported failure, was first originated.

The *Abydos*, as the steamer was named, probably reached Zanzibar about the middle of March, and she left again on her return voyage on the 22nd of April.

During the Easter recess I received letters from Dr. Kirk announcing that the news of the intended expedition, which had been sent by telegraph to Aden, had reached him in very good time, and that he was diligently preparing for its reception. He had no definite intelligence either of Livingstone or Mr. Stanley, but believed that the former was still at Manyema, and that the latter had gone to Ujiji. The disturbances, however, at Unyanyembe continued, and the communication with the interior of the main line was therefore still interrupted, though travellers came in from the north and south of the lake, and a Mission from the King of Uganda (on the Lake Victoria of Speke) to the Sultan of Zanzibar was at that time actually residing on the island. It will depend greatly, of course, on the relations between the Arabs and the natives, and the consequent security or insecurity of the roads whether Lieut. Dawson will seek to penetrate to Ujiji by the route of Unyanyembe, or whether he will prefer taking the northern line along which the Uganda Mission travelled to the sea coast. This northern line, which debouches sometimes on Mombassa and sometimes on Zanzibar, is becoming, according to Dr. Kirk's reports, a regular trade-route between Upper Egypt and the African seaboard, and will thus facilitate, in no small degree, the solution of those problems which still remain unsettled, and which were ably discussed by Captain Burton at one of our recent meetings as to the southern configuration of Lake Victoria, and its possible division into three or more distinct bodies of water.

A telegram reached England early in the month to the effect that the *Abydos* which left Zanzibar to return home on the 22nd of April and arrived at Aden on May 1st, had brought intelligence of the meeting of Livingstone and Stanley at Ujiji. This meeting is nothing more than might have been expected from our previous information of the movements of the two travellers. If Dr. Livingstone, indeed, had received at Manyema the supplies which had been sent on by Sherif Basheikh from Ujiji at the end of 1870, he might very well have concluded his investigations of the Cazembé waters during the course of last year, and have thus returned to the west side of Lake Tanganyika by February last: while if Mr. Stanley, on recovering

from his fever, had been able, notwithstanding the loss of his supplies, to push on from Unyanyembe, he would also have reached the same locality at about the same period of time; and it would have been very gratifying to Livingstone, who in all probability had abundant stores at Ujiji, to have been thus able to relieve the wants of the distressed but still persevering American traveller. For full information on this subject, however, as well as for an announcement of the plans of Lieut. Dawson's Expedition, we must await the arrival of the Zanzibar letters brought by the *Abydos* to Aden, and now on their way to England. In the mean time I can only repeat, that although the recent meeting of Livingstone and Stanley at Ujiji at present rests upon mere native rumour, yet it is so very probable a result of the arrangements known to be in progress, that it certainly merits attention.

In the absence of any direct intelligence from Livingstone, we are obliged to have recourse to conjectures, which will be received with more or less confidence, according to the temper, and perhaps the wishes of those who are addressed. I find from a route, which was communicated to us by Dr. Kirk in his last despatches, that Manyema is much further from Lake Tanganyika than I had before suspected. According to this route, which mentions eleven large stations, each separated by considerable intervals, between Marungo, at the southern extremity of the lake, and Manyema, the distance cannot be less than 200 or 300 miles, and I can well understand, therefore, that Livingstone, in his present crippled and infirm condition, may have long hesitated to undertake so formidable a journey on foot—the reason, or one of the reasons, of his protracted sojourn at Manyema being thus perhaps explained. That he really is in a crippled condition, and unable to tramp over Africa as he used, unwearied in body, unbroken in mind, hardly admits now of any doubt. His accident with a buffalo was reported to Mr. Stanley many months ago by two informants, and the story is now confirmed by the merchants who have lately seen him at Ujiji. A man with one arm and one leg, however determined in character or vigorous in his general constitution, cannot further endure the fatigue of African travel; and if Livingstone, therefore, as I believe to be the case, has now returned to Ujiji, it is probably with the view of turning his steps homeward, and abandoning to younger explorers the supplemental solution of the great problem of the African watershed. That that solution, then, may fall to the lot of our present Expedition, animated by the spirit and informed by the experience

of Livingstone, I fervently hope, feeling assured that Livingstone himself will cordially cast his mantle on their shoulders, and rejoice with honest pride in their success.

Postscript.—Since reading my Address at the Anniversary Meeting, I have been favoured by Earl Granville with copies of official despatches, written by Dr. Kirk to the Foreign Office, under date of 10th April, in which, speaking of the letters received from the Arab traders of Unyanyembe, which had been placed in his hands by the Sultan of Zanzibar, he gives the following important details respecting the rumour of the meeting of Dr. Livingstone and Mr. Stanley at Ujiji:—

“In no letter to which I have had access is mention made either of Dr. Livingstone or Mr. Stanley, nor, so far as I have been able to learn, have any letters been received in transit for New York from the latter. I have myself closely examined the slaves from Unyanyembe as to Mr. Stanley's movements, and learn that, having fallen back with the Arabs on the station, on the day of their defeat by Mirambo, Mr Stanley, shortly after, set off in company with a party proceeding to Ujiji by a roundabout way, skirting the disturbed districts; his second white man (mate of an American ship, the *Nerada*, who joined him here) was sent back to Unyanyembe, where he died. So far the native account of what fell under their own observation may be relied on, but great doubt attaches to the further hearsay statements that I now relate.

“These slaves, examined separately, state that before leaving Unyanyembe, Saeed bin Majid, an Arab of Ujiji, whose name I have before mentioned, fought his way past Mirambo and entered the settlement, having lost five of his men in an encounter. He brought with him neither ivory nor goods, and had left all but his fighting men at Ujiji; he is said to have reported that, before he left, Dr. Livingstone had returned to Ujiji and been joined by Mr. Stanley. It is also said that Mohammed bin Gharib had returned, and three others who had gone on the Manyema track.

“I unwillingly mention such reports, being at the same time wholly unable to vouch for their veracity. Mr. New, myself, and some Arab chiefs have tried our best to sift them, but without success: they may be pure inventions or prove true statements; the Arabs seem inclined to credit them, while white men, on the whole

doubt their accuracy. Of one thing I am, however, convinced, that the suspicion entertained by people at home, of news being in possession of the Arabs of some misfortune having befallen Dr. Livingstone, which they conceal in order to profit by goods sent to his relief, is wholly groundless and false.

"I have addressed the chief men of Unyanyembe by the slaves now on their return, and who will reach within thirty days, complaining of their having given no intelligence, and urging them to write at once and send on any letters they have in hand from Ujiji relating to the Doctor."

P.P.S. Whilst these sheets are passing through the press, further authentic intelligence of the movements both of Stanley and Livingstone has reached us by telegraph from Aden, as well as from Bombay. It seems that Livingstone, in the course of last autumn, must have followed up the western drainage from Manyema to the north end of Tanganyika, and that he found all the rivers flowing into the Lake, apparently by the Rusizi Channel—the possible connection of this Lake and its affluents with the Nile, which has been a favourite hypothesis with recent inquirers, being thus finally disposed of. From the north end of the Lake, Livingstone proceeded to Ujiji, where, as already conjectured, he met with Stanley and took possession of the residue of the supplies. After this meeting, which must have been full of interest, the two travellers journeyed together from Ujiji to Unyanyembe, and Stanley, continuing his route, pushed on to Zanzibar, where he had arrived with letters from Livingstone before the departure of *H.M.S. Wolverine*, which reached Aden on the 13th of June. But the great traveller himself, indomitable as ever, and caring little for personal comfort or convenience, is said to have been disinclined to leave the country until he had completed his explorations. He was preparing accordingly, as soon as the arrival of further supplies from Zanzibar had placed him in a position of independence, to turn his steps from Unyanyembe to the southward: primarily, it is said, for the purpose of examining a subterranean passage of great local celebrity, and the reports of which had strongly arrested his attention in a previous journey, but also, it may be surmised, with the more important object in view of ascertaining whether there is any outflow in this direction from Lake Tanganyika to the sea, as laid

down on the old maps of Mr. McQueen and others, on the authority of the Portuguese and Arab traveller.* Dr. Kirk had crossed over to Bagamoyo to forward on the supplies to Unyanyembe, and Mr. Oswell Livingstone intended to accompany the caravan, and thus join his father in his future wanderings. We are not yet officially informed of the proposed movements of Lieutenants Dawson and Henn; but it is probable—as the immediate objects of their expedition, which were the discovery and relief of Livingstone, have been accomplished—that they will return to England.

* In Captain Owen's Admiralty Chart of 1824 the delta of the River Lufji is laid down from $7^{\circ} 45'$ to $8^{\circ} 15'$ south latitude; and the river is said to come from a lake (Tanganyika?), forty days' journey to the west.

June 14, 1872.



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BEFORE THE

ROYAL GEOGRAPHICAL SOCIETY

DURING THE SESSION 1871-72.

[FORMING VOL. XLIII. OF THE SOCIETY'S JOURNAL.
PUBLISHED JUNE 23RD, 1873.]

I.—*Journal of an Exploration of the Limpopo River.* By Captain FREDERICK ELTON.

[Read November 13th, 1871.]

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Although this theory eventually proved an incorrect one, I must say in justice to Mr. Baines that his encouragement, and the kindness with which he furnished me with all information at his disposal, in a great measure decided me to undertake the journey.

On the 7th March, 1870, in a letter to Mr. Levert, the Managing Director of the London and Limpopo Mining Company, at the Tati River Settlement, I stated my conviction that an expedition undertaken with the view of exploring the country towards the Limpopo River and the Limpopo towards the sea-coast—an almost unknown line—would lead to the discovery of a shorter route of practicable communication—partly by land, partly by water—between the Tati River and the sea-coast, and consequently effect an important saving of time, and a considerable reduction in the heavy expenses of the carriage of goods by waggons from Natal, *viâ* Potchefstroom—the circuitous road in general use.

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eventually arranged, upon terms mutually satisfactory to the parties concerned, that such exploration should be undertaken by me, the results to be for the Company's and my own information.

The outfit for the expedition, as originally decided upon, would have ensured the journey being made in tolerable comfort, but in lat. $21^{\circ} 27'$ s., long. $27^{\circ} 40'$ E., nearly 1000 miles from Port Natal, even the most carefully laid plans and arrangements are frustrated by the want of regularity with which communications are kept up. A flat-bottomed boat, 13 feet long, with masts, sails, oars, &c., was successfully constructed at the Tati; donkeys were ordered from the Transvaal; an interpreter was engaged; saddle-bags were made; and a man from Umseila's tribe, acquainted with the coast country and the Lower Limpopo, was enlisted as major-domo.

In April, I accompanied Mr. Levert on a mission into the Matabele country, where at Kibi-Klocklo, the king's kraal, a convention was agreed upon, on the 29th April, by which No-Bengule, for an annual rental and a fixed sum, granted to the London and Limpopo Company, the mining district comprised between the Ramakhaban and Shasha Rivers (from the watershed to the junction of such rivers), and also the permission to construct a road down the Shasha River to the Limpopo River. On the same day, No-Bengule promised to forward my projected journey, as far as my line of travel passed through the tribes over which he held any power.

The documents regarding this grant were published by Mr. Levert, and as shortly afterwards No-Bengule fully established his authority by defeating the Zwong-Entabi—a strong section of his tribe—which opposed his election as King, they furnish a title to the peaceable occupation of the Tati District.

On the 13th May (on our return journey towards the Tati) we left the main road to visit a newly-opened shaft—the “Half-way Reef”—near the Ramakhaban River, and there were unfortunate enough to meet with a serious accident, which not only threw back the departure of the expedition for more than a month, but also prevented any further personal supervision of the preliminary arrangements.

Through the thoughtlessness of one of the miners, a quantity of blasting-powder was exploded, the sparks falling from his pipe into the chest used as a magazine, in which he was searching for a letter. The log-house was instantly enveloped in flames, and it was with difficulty, scorched as we all were by the explosion, that any of us escaped. Mr. Levert was very

severely burnt; the author of the misfortune was killed; two miners, the interpreter, and myself, were more or less injured, and the remaining days of May and the month of June found us all under the hands of the doctor. July commenced, no waggons arrived from the Transvaal, no donkeys were to be found, and the interpreter engaged for the journey, impatient at the long delay, broke his agreement, and left the Tati. Everything appeared to go against the expedition; the healthy season was far advanced, and if 1870 was to see it accomplished, no more time was to be lost.

I was convinced that more than half of the information collected from hunters, traders, &c., with regard to the "Tsetse" fly, was an exaggeration, and made up my mind to start with pack-oxen instead of donkeys, travel as quickly as possible, and risk the dangers of the dreaded "fly," taking a waggon with me as far as the Makalaka kraals, between the Shashani and Tuli Rivers. This line, it is true, was somewhat circuitous, but the Company had already established relations of trade with the Makalaka, and I expected to procure carriers from their chiefs without much delay.

On the 6th July, I got fairly under way, and with my boat and baggage in a waggon, and my three pack-oxen following, bade adieu to the Tati settlement.

I.

The Makalaka Tribes and the Affluents of the Shasha River.—From the Tati to the Tuli, Shasha, and Limpopo.—A Reference to Appendix A and to the map (carefully laid down by estimated distances and bearings, taken with the prismatic compass, the correct position of Tati, Ramakhaban, Shasha, &c., being ascertained), will show the direction of my five days' journey with the waggon to the kraal of Madume and the Sapi River.

The country from the Tati to the Sapi is covered with a vast area of undulating bush, in the composition of which the thorny acacia, the mimosa, the murule (the favourite fruit of the elephant), occasional fig-trees, a species of yellow-wood tree, "kameeldoorn," mopani thickets, and thorny underwoods are predominant. The amatlali, 'mkogelo, motsoorie, 'mtocuri, and various other wild fruits are common, and tall, waving grass grows in patches wherever the soil affords the slightest holding-ground for its roots, the land being bare only in the localities where the granitic rocks have broken through in overlying masses, and in places where quartz rocks, quartzose gravel, "quartz-blows," and slate "casings" extend in long arid strips of barren waste.

The character of the formation is essentially metamorphic, the ranges of low hills lying between the rivers are trappean in character, and the isolated conical "kopjes" are composed of granitic rocks, heaped one above the other by the powerful agencies which in ancient days have been actively employed in these districts.

The rivers are periodical, although (with the exception of the Satsuke) they seldom entirely dry up. All run in broad, sandy beds, thickly fringed with reeds, rushes, and tall "tambootie" grass, and between clearly-defined banks overshadowed by the wild fig, tamarind, and larger trees than those observed in the heart of the bush. Water-pools are few and far between, all those situated away from the rivers drying up during the hot season, and travellers "eat their bread with carefulness, and drink their water with astonishment," when passing through the inhospitable and thirsty tracts between the streams, for no kraals are to be found, and the only inhabitants are a few wandering Masaras, who live by the chase, and studiously avoid their fellow-men.

Lions are numerous, and prowl about the river banks by night, in search of the game which they know must be forced by thirst into their clutches. Guinea-fowls, grey and red partridges, francolin and bush pheasants troop down in the cool of the evening across the sands; the rhinoceros, buffalo, gnu, koodoo, pallah, zebra, giraffe, harris-buck, and tessébé, hidden in the shade of the bush during the day, before daybreak and at sundown turn their heads towards the water. The elephant travels rapidly from one river to another, the constant war waged against him by the hunters keeping him nervously on the alert, and the ostrich—already rare in the land—chooses an open grass glade where a good view of all approaches can be obtained. The hyæna, the cynhyæna, packs of wild dogs,* and the tiger with flocks of vultures (the adjutant?), and the eagle are the scavengers of the land—an immense nursery-ground for big game, which stretches away into the Kalihari Desert, up to the Zambesi, and down to the low coast regions with but few breaks and interruptions.

* There is a species of wild dog (distinct from the cynhyæna) which hunts in packs—the "wildebond" of the Boers. It has long and erect ears, and resembles the Persian greyhound in build, although with coarser and heavier limbs, and is of a dark tawny colour. I was at the Tati when two deer—impalah—were chased into the settlement by a pack of them. One pallah was pulled down by his pursuers near the steam quartz-crusher, and taken by the engineer, Mr. Arkle, the other by Dr. Coverly, the dogs leaving their prey on the approach of man. This "wildebond" has no affinity with the cynhyæna, which I have shot, as well as "hyæna crocata," in the neighbourhood, but would appear to have many points in common with the wild dog of the Deccan.

From the Ramakhaban to Madume's, the road follows a track made by the elephant-hunters' waggons (they usually make their head-quarters on the Semookie), and is in many places rocky, difficult, and impeded by bush and trees. The range of hills lying between the Ramakhaban and the Tati, the curious group of distant "kopjes" near the confluence of the Ramakhaban and Shasha, and a range beyond the Shashani, through which the path winds tortuously into the valley of Sapi—all of metamorphic character—are, together with the rivers, which form the daily stages, owing to the scarcity of water, the distinctive marks by which the monotony of the close bush country is relieved.

Madume's kraal, almost hidden from view by huge rocks, is perched upon the summit of a lofty and isolated hill, dotted with numerous trees. The houses, of the mushroom type, are neatly built with logs, and daubed with mud, a well-defined "kotla"—or inner court—being railed off for the dwellings of the "Moreno" (Chief) and his women. From the village, a fine view of the surrounding country displays the Sapi winding through broad fields of *holcus* and maize, and disappearing through a deep gorge in the abrupt hill-range, encircling the valley on every side. Towards the south-east, remarkable peaks of granite formation tower over the bush, and in this direction there is not a sign of any habitation to be discovered, although on the Sapi many huts are scattered about for the better protection of the fields.

Madume is subject to Quatlalala, who governs all the kraals down to Masiringi's—a powerful Chief, whose villages are situated between the confluence of the Tuli and Shasha, on the right bank of the former river, Peri-peri being apparently the most influential and the paramount lord of all the other "Morenos." None of these Makalaka tribes possess cattle; goats and a few sheep compose their flocks; but in the cultivation of the land they are successful and hard-working, generally raising sufficient corn over and above their own requirements, to enable them to trade with the Tati and the elephant-hunters. The men possess a considerable number of guns, and depend mainly on them to supply the villages with meat, all ivory killed in the chase becoming the property of the Chiefs, who pay an annual tribute of tusks to the Matabele, by whom the country was overrun and conquered in the days of Moselikatze.

The castor-oil plant is cultivated, and the oil used to lubricate the body. The cane called 'mphie (*Holcus saccharatus*), tobacco, the Indian hemp-plant (*Cannabis Indica*), smoked in the form of "dakha," the ground-nut (*Arachis hypocarpogea*), maize,

millet (*Holcus Sorghum*), and pumpkins were also met with in the fields and gardens adjacent to the kraals.

The salutation of the Makalaka consists in loudly slapping the hands together, after which snuff is passed round. A silence of some minutes ensues, and eventually the business of the visit is gradually broached by a series of questions, involving the relation of the stranger's whole personal history and future plans.

Children have their heads shaved with the exception of a single tuft, and are carried on the backs of their mothers in the invariable leathern skin, which is here frequently of a double size, well prepared, and often ornamented with circular patches of beads, arranged with a certain amount of taste, and with a good eye to colour. The maidens wear a short fringe of beads, or "nbendhle." This, on reaching the age of puberty, is exchanged for a leathern kilt, at the occasion of a feast and dance which publicly succeed the month of seclusion required by custom at such period.

As amongst the Matabele, the birth of twins is regarded as a misfortune, and the woman unfortunate enough to bear them is subjected to the jeers of her village, the infants being quietly put out of the way. The occurrence is, however, uncommon, for the race is not prolific, and the women, overworked from childhood, seldom bear more than an average of three children to their tribe. Circumcision with the present generation is falling into disrepute, example being taken from the Matabele, who in a great measure have discontinued the rite, but a ceremony consisting of a hunt, followed by a feast, proclaims the date from which the boys are entitled to rank as men, beer made from holens, goat, zebra, and buffalo flesh forming the main staples of the cheer at all such entertainments.

A roughly plaited straw hat—a fashion borrowed from the Bechuana, with whom the Makalaka have more affinity in manners and customs than with their conquerors, the Matabele, —often ornamented with ostrich feathers, blue-bead necklaces, strips of leather hanging from the neck, to which are attached the snuff purse, the thorn bodkin, and sundry pieces of antelope, horn, ivory, &c., infallible fetishes for the chase, rings of iron or brass worn on the ankles and wrists, the usual leathern loin cloth of the Bechuana, strong hide sandals (indispensable in so thorny and stony a country), and a large leathern mantle for protection against the cold, rain, and heavy night dews, compose the male attire. Should the man be the happy possessor of a gun—possibly an ancient flint-musket of the last century, bound around the barrel and the stock for better security against the overcharges of powder with which they invariably

shoot—he is inseparable from it, and carries buckled about his waist a heavy and clumsy bandolier, in which ten minutes' busy search is necessary in order to discover bullets and powder. The cleaning and furbishing of these possessions constitute a daily occupation of several hours, and divide the day with the inhalation of dakhā and snuff, and the devouring of as much food as the individual can procure and dispose of.

Bell-shaped earrings of brass are not uncommon ornaments of the women, who allow their fancy to run riot with regard to the coiffures they adopt. The hair plastered down with fat, and fastened with heavy brass rings in three pendent tresses on the forehead, is eminently aristocratic, and is principally in vogue amongst the wives of the "Morenos." Others shave the head, with the exception of a circular tuft dyed of a red colour; whilst a third and very favourite fashion is to train the wool into a thousand perpendicular curls, which stand erect above the head, and are sometimes crowned with a "toupée" of ostrich plumes.

In morals, the Makalaka are superior to the Bechuana tribes. The bond by which the wife is held as common property between two sworn friends—a common practice with the latter people—is unknown to the former. Polygamy is permitted, and wives are purchased with guns, ivory, feathers, goats, corn, and, in fact, with all produce; but selling children as slaves is not one of their faults. In character, the Makalaka is cunning and horribly avaricious; lazy, yet capable of great exertion; incapable of telling the truth with regard even to the most trivial subjects; cowardly in war, but daring in the chase; abjectly obedient to his Chiefs, and from infancy impressed with the uselessness of resisting the Matabele. Hence a good reception from the Chief ensures an equally good reception from all his men; but the slightest display of valuable baggage—beads, blankets, powder, lead, &c., effectually secures annoyance, extortion, delay, and perhaps violence, unless prestige is carefully preserved, and the upper hand maintained with watchfulness and energy.

In "physique" the Makalaka is inferior to the Matabele, and his features partake more of the negro type, although the race has been in some kraals crossed with that of the conquerors, as well as with the Bechuana. Perhaps the most distinctive features are the prevalence of beards amongst the older men, and the thin-flanked, active, hard appearance of the younger ones, who, mainly living by the chase, are generally in good condition, and in marked contrast to the well-fed Zulu tribes.*

* The "tribe-marks" are gashes made obliquely across the temples, but they would appear to vary under different chiefs; and the Makalaka cannot be said to have any universal distinguishing sign for the race in general.

Deformed children are not killed. At Umsinyo's I saw a woman who had evidently been deformed from her birth.

They are clever manufacturers of pottery, and work well in wood, their huts, fences, mangors for provender, drinking bowls, and household utensils being fairly and neatly finished, whilst in the manipulation of leather, they excel.

The subdivisions of the family differ but slightly in habits, appearance, manners, and customs one from another; and the above descriptive sketch will apply, with a few trifling variations, to all the villages visited *en route*.*

Qualalala is chief over his own town, and over the kraals governed by Madumo and Uvula. Nominally, M'Nsindami is under his rule, but I imagine is too far from head-quarters to permit much interference with his affairs, for he pays his tribute directly to the Matabele king, instead of passing it through the hands of Qualalala. Peri-peri rules on the left bank of the Tuli. Masiringi is head of his own thickly-peopled villages near the Shasha and the falls of the Tuli, and claims authority over Selika and 'Mzamban. Umsinyo appears independent, and seven miles from the Limpopo (here styled the Oori), 'Neombusi governs a highly-cultivated tract of land, and a large stockaded kraal.

Madume, Uvula, M'Nsindami, Masiringi, and Umsinye have all constructed their towns upon hills, with the double view of protecting themselves from any raid, and from the wild beasts, which everywhere abound. Selika, 'Mzamban, and 'Neombusi have entrenched and stockaded kraals, capable of being defended for a long time against any attack, the approaches to them passing through veritable labyrinths of felled trees planted perpendicularly in the ground, forming passages through which two men would find it impossible to pass abreast.

Serious and annoying delays were experienced before leaving the waggon, in consequence of the difficulties thrown by Madumo in the way of obtaining carriers for the boat. He insisted upon becoming the holder of half the goods paid for the hire, and, I fancy, kept the lion's share for himself, for I was forced on the road to make a second and a third series of extraordinary payments, and submit to all the caprices of the carriers. On the 12th July, I prophesied the eclipse of the moon, which was witnessed to the greatest advantage, the night

* Their language is a dialect or rather an offshoot of the Sechuana, in which the rolling R predominates, a sound which the Zulu finds it extremely difficult to utter. For instance, the Ramakhaban is the Makalaka name of the river we crossed on the 7th July; but the Matabele, finding it irksome to use the R, style it the 'Mqueban (or Umqueban); and so for many other names of rivers, kraals, &c., "Um" is the usual prefix for river.

being clear and fine, and then on the following morning told the chief that I could read his thoughts,—that he was simply delaying me in order to extort presents and goods for his own benefit; that his men, if left to themselves, were ready to go; and that as I foresaw the eclipse, so could I readily foresee that the Matabele would punish his tribe unless this nonsense came to an end. After this, I had no further trouble with him; the carriers were forthcoming, and on the 14th I left the waggon with orders to return to the Tati, and started on my journey, sending back the greater part of my baggage, and loading the oxen as lightly as possible with only the strictest necessities for the road. (I was obliged eventually to throw away even a portion of this reduced store.)

The "personnel" under my command consisted of 'Mbata, a man from Umseila's tribe on the Busi River, generally known as "George," a faithful and hardworking man, my guide and medium of communication with the natives; Svelaburibi, a man from Machen's town at Bamangwato, good with oxen, helpless in the boat, a capital shot and successful hunter, but lazy and difficult to manage; Sevombu, a little Matabele boy, who went in the boat, cooked, and made himself generally useful; and a volunteer from Madumo's, to whom I took a fancy from his open, good-humoured face, a willing lad of about eighteen.

The oxen, laden only with light saddle-bags, soon travelled without being lod, my main encumbrance being the boat, which took 12, 15, and at last 23 men to carry it, and caused me half a day's more delay at Uvula's, in order to cut down and fix poles beneath it, and engage a second relief of carriers at a fancy price.

The 17th, 20th, and 25th July were forced halts, in consequence of disputes with these men. On one occasion they deserted for several hours, and on the 25th threatened me with violence, unless I increased the hire to threefold the amount originally agreed upon. A threat that I would blow up all my baggage, and a determination not to give in, saved me from any serious issue to this last attempt at extortion; and I was not sorry to finally settle up with Madumo's and Uvula's men, and see them turn their backs on my camp near Selika's, and depart for their respective kraals. The boat was eventually brought down the Shasha by Selika's men to the Limpopo without any further trouble.

Near Uvula's, we crossed a small stream running into the Sapi. The Sapi runs into the 'Mmwewe, and the 'Mmwewe into the Tuli, according to native report.

Before reaching the Tuli, auriferous quartz was found during

a few minutes' halt (15th July), and the formation and aspect of the country resembled strikingly the Tati. The Tuli, though a permanent river, is, owing to rapids, falls, and its rocky bed, impracticable for any description of boat; neither is the Shasha of any practical utility regarded as a means of water communication, except perhaps during the rainy season, when the absence of rocks would permit a large-sized boat to descend this latter river to the Limpopo with safety.

The scenery on the Tuli is wild and striking; large baobabs, tamarind, and fig trees border the stream, and numerous rapids, and a remarkably rocky causeway near the kraals of Masiringi, over which the river falls in a succession of cascades, and races in a boiling torrent down a deep gorge into a lovely valley (seven miles from the Shasha River), are refreshing to eyes wearied by the eternal bush country. Huge blocks of reddish-coloured granite and basalt, large hornblendic rocks, and overhanging hills, crowned with bold, bare masses of granite, compose the framework of Masiringi Falls and Causeway—a wild and magnificent landscape set in a framework of giant trees and brilliant foliage.

Fresh elephant spoor was frequently passed, and the buffaloes came out of the reeds to stare at our boat party. All other game was plentiful, and there was no lack of food for the men in camp. The nights were bitterly cold, but wood was under our hands, and large fires and plenty of meat kept the party in good temper. The noise in the evening was rather painful to one's nerves, the “dakha” smoking, and its accompanying whooping and distracting cough and deafening recitative, the “medicine man” who nightly threw four cross-shaped dice and a knuckle bone to predict the events of the morrow, the shrieks of incessant laughter, the gorging round the fires, the constant cries of “toosa! toosa!” (backshish), in fact, the circumstances which to the African constitute the poetry of camp life, are performances which, nightly repeated in the same tone and key, eventually become irritating to a degree.

Abundance of millet, crushed maize, ground nuts (excellent when parched in the ashes of a wood fire), and indifferent beer we found at all the kraals. Ivory, and rhinoceros horns, together with a few ostrich feathers, were frequently offered us for sale; and the “Morenos” failed entirely to comprehend the phenomenon of a white man who was not anxious to trade, and was mad enough to propose descending “the great river” in a small boat.

Miles of reeds and bulrushes mark the junction of the Tuli and Shasha Rivers, herds of buffaloes hurbouring under their shade. During the greater part of the year, the two rivers

only constitute one stream; but the natives persistently distinguish the "Tuli" and the "Shasha," and the Shasha emptying its waters into the Limpopo by two distinct mouths separated by an island, these channels receive the titles of the Shasha and Tuli—the upper, the west branch, being known as the Shasha, and the lower, the east branch, as the Tuli, three miles below the former. Close to the "Tuli" mouth there is a practicable ford over the Limpopo, starting from the base of a line of peculiar escarped rocks, the only available "drift" for a considerable distance; and it would be easy to establish a punt and permanent ferry at this point, should a road be opened from the Tati to the Limpopo down the Shasha.

During the rainy months, the Shasha, after receiving the waters of the Tuli, must form a formidable torrent of nearly a mile in breadth; and at no period of the year does either stream entirely dry up, although the Tuli brings down a far larger volume of water than the Shasha. From the fact of the two distinguishing names being preserved arise the conflicting statements of the natives with regard to these rivers, which have led in several maps to the Tuli being laid down as a separate river farther to the eastward, and unconnected with its recipient—the Shasha.

The "tsetse fly" exists only to a limited extent, and is confined rather to the Tuli than to the Shasha, disappearing entirely in the cold weather, and occasionally even in the hot season, unless exceptional heat rapidly succeeds the rains. Very little traffic would suffice to drive the buffalo from the Shasha, and the fly, it is well known, would speedily follow.

"Hunting in the Fly," a term generally applied by the hunters to their operations in this district, is an exaggeration, and I am convinced that the major part of the danger said to be incurred from the "tsetse" is easily to be avoided, notwithstanding the "travellers' stories" with regard to its poisonous bite, which most certainly are not universally confirmed by native opinion.

The Makalaka tribes are well disposed towards the establishment of the projected road, and the annoying delays, encouraged by the chiefs as a means of extorting heavier presents from travellers, could easily be put a stop to by addressing a request to the Matabele to send down orders to the various kraals, forbidding them to place any obstacles in the way of traffic. The slightest hint would have the necessary effect.

II.

Descent of the Limpopo to the Falls of Tolo Azime.—On the evening of the 30th July, I encamped in the bed of the Shasha, at the distance of a hundred yards from the Limpopo—here a broad, deep stream about two hundred yards in breadth, fringed with large trees and thick underwood—where the first sight to greet our arrival was a family of six or seven crocodiles sleeping upon a small sand island, rather above the affluence—a living justification of the name given to the river by the Boers—"the Krokodil."

The 31st was a busy day spent in getting boat and packs in travelling order, and in visiting the two embouchures of the Shasha. I decided to send the oxen over the ford at the "Tuli," precipitous ranges of hills making the left bank of the Limpopo apparently impracticable, and in the case of the land party failing to meet the boat, I instructed Mbata to halt at the first river he met, running in from the southward. A water-buck was killed and prepared as "biltongue," for the voyage. Notes, maps, and sketches were looked over and put straight, and finally the boat was brought out of the Shasha and anchored in a creek of the Oori, below the camp.

At dawn, on the 1st August, I began my voyage, Selika's men shrieking with delight and excitement, at the sight of the first boat that had ever been launched on the upper waters of "the great river," for up to the very last moment they would not believe that I seriously meant to carry out my plans, and told terrible stories of crocodiles, hippopotami, and rapids, to my men; working strongly on the nerves of Sevombu, the youngest of the party, who, I fancy, began to repent having followed my fortunes.

The drift of the "Tuli," and a succession of broad shallows, gave us some trouble in the boat, but for the major part of the day's journey, plenty of water was found. Crocodiles were seen in numbers; a large troop of buffaloes broke from their covert in the reeds, and halted to survey us from the lower slope of the hills on the left bank. From the opposite range on the Zoutpansberg side, a species of wild fig, taking root everywhere amongst the interstices of the rocks, hung in long, graceful tendrils, and appeared to cover the favourite hiding-places of numerous monkeys, who loudly chattered their surprise at our unusual appearance. One or two large fish eagles rose from the shadow of the cliffs with shrill screams; an occasional cormorant, a few pairs of Egyptian geese, and graceful blue and white herons lazily watched our approach; and towards evening large flocks of hornbills passed in their clumsy flight

over our heads. Where the hills receded, large tamarinds, figs,* and a few baobabs towered over the thick foliage of the smaller trees, and the dense underbush interlaced with coils of "monkey-rope"—the resting-place of innumerable birds and their colonies of nests—

"The river trailing like a silver cord
Through all, and curling loosely, both before
And after, over the whole stretch of land."

On the 2nd, I met with an untoward accident, which entailed continual discomfort on the rest of the journey. Coming suddenly round a bend, the boat was driven down by the stream, and upset under the wide-spreading branches of a large tree, which, undermined by the current, had partially fallen into the water, remaining firmly attached to the bank by its curling roots. I lost all my blankets, waterproof sheet, thick overcoat, and cooking utensils, and my store of tobacco and sugar was entirely spoilt. Irreparable misfortunes! Luckily it was no worse, and the boat, bottom upwards, was brought up on a sandbank about half a mile lower down the river. Two hours later we passed the Ipage (or Paje), a clear, broad stream running in from the north-west, through a gorge in a considerable range of hills hugging the left bank, and abruptly ended by a bold, escarped bluff, the habitation of legions of baboons, opposite a small kraal under a chief, by name Itepa, where we spent the night drying everything by a large fire.

On the following day, August 3rd, we found the land party at Mafelagure's, a village on the right bank about a mile above the embouchure of the Injelala (or Hout River of the Boers), running in from the south-west through a mouth choked up with reeds and bulrushes.

The Limpopo (from the Shasha to this point only obstructed by small rapids), gradually increases in importance, and a broad channel with from 4 to 10 feet of water can be followed without great difficulty. The prevailing direction is south-east, although the course winds considerably; and up to Itepa's, the left bank is almost invariably overshadowed by lofty ranges of hills, stretching away far inland from the river, the right bank being freer from obstacles; and from opposite the Ipage a flat, well-wooded country.

Itepa's and Mafelagure's men are offshoots of the Makalaka tribes, inferior in appearance, and darker than the tribes on the

* There are four different trees on the Limpopo bearing leaves and fruit of the fig family. Two of them attain a very large size, and one is remarkable for its wide-spreading branches, which give it the appearance of a giant umbrella. None of the four are identical with the Indian "banyan." In addition to these trees there is the parasitical creeper of the same family above alluded to.

Shasha and Tuli, arising from the admission into their kraals of the wandering Masaras—the lowest type of humanity in these regions, and akin to the Bakalihari. They have but few guns, and are principally armed with bows and arrows; quiet and inoffensive in their manners; afraid of their neighbours and strangers, but, on better acquaintance, civil and communicative. From them we heard the first report with regard to the falls of the Limpopo, which they described as “a wall of water,” and a desolate region where lions abounded, and had driven out everybody, and where hippopotami and crocodiles were to be found in legion.

Beyond Mafelagure's, at about nine miles distance, we passed on the right bank a group of isolated conical hills—one fronting the descent of the stream, with huge blocks of granite placed one above the other in the position of giant steps; another crowned with a large baobab tree, constituting a peculiar feature in the landscape; and a little below this point a high range ran nearly parallel to the opposite shore. Rapids now became more frequent and of a more formidable character, until the 'Mzinyani was reached—a large river running in from the north.

Here the Limpopo, stretching out to a width of more than a mile, rushes in a dozen different channels over large boulders in seething and foaming rapids, interrupted by circling eddies, and deep, dark, silent pools, the habitat of hippopotami, who feed on the long waving grass of the thickly wooded islands, the surrounding reeds being honeycombed in every direction with the paths by which they travel on their nocturnal journeys; and at a distance of five miles the river culminates in the cataracts of the Tolo Azime.

The boat had been racing down with the current, and all my energies were directing towards running on shore. The trees on either bank of the channel, and the abrupt turns, entirely prevented any looking ahead; but the increasing roar of distant waters gradually overcoming even the constant boiling of the rapids, was a danger-warning of ominous portent. Sevombu clung to a thwart, and was quite helpless with fear, until we ran safely into a little creek under a large shelving rock, where we made fast, and scrambled through a sea of reeds and brushwood, in order to obtain a view of the situation.

Twenty yards' walk opened up a spectacle well calculated to make us shudder at the peril we had so narrowly escaped. A magnificent fall dashed down into a yawning chasm right ahead of the channel where we had stopped the boat, and formed one of a succession of cataracts by which the river precipitates its waters through a vast rent in the land, to a lower level.

Torrents of pale green water tore through the narrow passage beneath our feet, foaming and breaking in clouds of spray, over huge boulders, syenitic and micaceous rocks, intermixed with masses of a reddish-coloured granite rising perpendicularly from the gorge and overtopped by a sombre, columnar wall of basalt, imprisoning the roaring flood between dark and lofty barriers.

Granitic and hornblendic rocks and boulders lie scattered broadcast, and in the wildest confusion, over all the barren land on the right bank, stretching away to a low line of hills in the distance, witnesses of the convulsions and upheavals to which the land has been subjected, in order to form this "deep lateral gorge" through which the Limpopo descends from "the central plateau lands;" the whole country from here taking one downward step, and descending to a lower level in the most striking manner.

Our position was not an enviable one. We stood on an island where our boat was of no assistance to us, and the sun was nearly down before we discovered a large fallen tree lying over the head of a smaller fall higher up. Over this we passed, making ourselves fast to the rope of the kedge, which we took from the boat, and scrambling over the rocks of the smaller rapids beyond, reached the right bank and our camp at 11 p.m.—a long day of feverish excitement effectually keeping me awake the greater part of the night.

In the morning we moved down below the falls, and spent two days in endeavouring to extricate the boat from its awkward position. No assistance was at hand. Maselagure's people had spoken truly—not a human being could be discovered, and the kraals a few miles higher up had long been deserted by their former inhabitants. We succeeded, however, in carrying the boat to the foot of one of the higher falls, where it was swept down the chasm, the wreck finally lodging on a ledge of rocks near our camp, completely knocked to pieces, and of no further service, and I consequently abandoned the *Freeman*—a most unfortunate loss.

Let me endeavour to describe Tolo Azime more in detail, although the attempt to do so will, I fear, be a failure. I cannot exaggerate the beauty of the *coup d'œil*, or the natural and material features of the scene, for although much inferior in point of size to Niagara (which I have seen), or to the falls of the Zambesi, "the combination of contrasts" afforded by the falls of the Limpopo, in their peculiar formation and surroundings, render them well worthy of a place in future African maps, and of sufficient interest and importance to repay the exertions of any future traveller whom curiosity may prompt to bend his steps in their direction.

After the embouchure of the 'Mzinyani, the river, as I previously observed, rushes in a dozen different channels in seething and foaming rapids separated by islands. The channel on the extreme right bank continues its direction towards the south-east, boiling and sweeping over rocks and boulders, and is precipitated by a series of gradual and successive falls into a narrow gorge, where the volume of water is quickly increased by other channels seeking the same outlet. The gorge speedily increases in depth, and at last runs between perpendicular walls, principally composed of granite and basalt, 70, 100, and 150 feet in height. Here the remaining—the main—branches of the river inclining suddenly to the south, leap in a succession of parallel cascades (six in number) into this abyss, thundering majestically into the chasm, and almost obscured by clouds of spray rising in white vapour from the torrent below, which foams and races down into a circular basin, surrounded by high escarped cliffs: then turning rapidly to the south, and again to the south-east, escapes in a deep, narrow, swift channel, on its journey towards the sea.

The large trees and the vivid colouring of the left bank, extending to the islands and to the very verge of the fall, is in marked contrast to the barren lands, sandy valleys, stunted bushes, and scattered rocks on the opposite side, where from the summit of the basaltic rocks overhanging the gorge, a magnificent perspective is obtained—the whole scene lies before you. In front of you, and on a higher level, is the perpendicular barrier over which the river leaps into space; below you thunder the waters into the chasm; far away to the left you mark the gradual descent and commencement of the gorge; while to the right abrupt and escarped rocks overshadow the circling depths of the basin; dense woods sloping gradually from its margin towards a blue range of distant hills. One of the advantages of Tolo Azime is that a point of view can be obtained from which the whole panorama may be surveyed.

Hippopotami abound both above and below the falls (they tore up the thwarts of my boat during the night of August 6th); waterbuck, koodoo, numerous monkeys and baboons, otters (*Lutra capensis*), and a few buffaloes were observed on the left bank, but on the right, only a few impalah and klipspringer were seen; and my oxen had to be driven down the river banks for some miles to find a few parched blades of grass.

The Boers of the scantily inhabited Zoutpansberg district hardly ever venture in this direction across the Zoutpansbergen. Even in the healthy season they look upon the country as

malarious and fatal, an epidemic fever having travelled from the mountains on one occasion in company with a party of hunters, subsequently to which a fine was instituted by the "Raad" to be levied on every inhabitant crossing the range during the wet and hot months of the year. Both at Mafelagure's, and afterwards at Amabaya's kraals, the natives assured me that they had never heard of any hunter having visited the Falls; nor are they laid down on any map up to the present date. Should they have been seen before my visit, it is strange that from no single source—either from traveller, hunter, trader, or native—was any information received as to their existence during several months spent almost entirely in making inquiries with regard to the Limpopo.

At Tolo Azime, the Upper Limpopo may be considered to terminate, and to debouch from the central plateau. The falls, of course, are an insurmountable obstacle to navigation, and indeed the rapids for some distance higher up had already condemned this division of the river as unnavigable.

III.

From Tolo Azime to the Bubbe, Livubu, and Nuanetsi Rivers.—From Tolo Azime, on the afternoon of August 8th, my journey was continued on foot with the three pack-oxen and my four followers.

On the 9th, we encamped for the night within a few miles of the last peak of a lofty range on the right bank—one of the spurs of the Zoutpansbergen. On the 10th, we forded the Tave River, a deep, clear, and rapid stream of water running in from the south-west, in a rocky bed, over which we found a ford with difficulty. The right bank of this river is bounded by a succession of low hills, composed in the main of quartz rock, and quartzose gravel is everywhere thickly scattered over the soil.

On the 11th, we struck an immense extent of reeds visible on the left bank, probably the mouth of the Snbischani River, and from here the Limpopo, which had been running free from obstacle, after a rapid bend, tore down in a narrowed channel, over a rocky bed, in a succession of rapids and small falls, until, on the following day, the 12th, a rocky causeway was reached, constituting a second fall in the level of the river.

The scenery here was peculiarly wild and interesting. A large range of hills on the left bank formed the back-ground, from which a thickly-wooded country sloped down towards the river. Huge boulders and blocks of granite overtopped the network of rents, through which the waters dashed noisily down,

either in shallow, foaming rapids, or in successive and miniature cascades.

Great hornblendic rocks enumbered the whole stretch of the valley pent in between the river and abrupt and escarped hills, impeding the progress of the oxen to such an extent that I began to despair of success, and think any further descent of the Limpopo must be abandoned. A shallow, brawling stream wound through the hills bounding the right bank, the bed being strewn with pebbles and boulders. Crossing this soon after daybreak, the wildness of the scene was increased by a group of lions, which continued to fight over the carcass of a zebra across the causeway, without paying the least attention to our party, and I wrote down the spot in my road-book as "Lion's Causeway."

That evening we were compelled to ford the river, breast-deep in places, to the left bank, the small path we had been hitherto following being cut off by a considerable range of hills rising abruptly from the water's edge. After passing the night under the shadow of an enormous baobab, on resuming our march the next morning (13th), we failed in one place to accomplish more than a mile in an hour, the river running between parallel ranges of escarped hills in rapids and small falls, boiling and foaming through shallow passages and around small islands.

We had held no communications with the natives since leaving Mafelagure's kraal, with the exception of meeting a small party of his men, who followed us with tobacco and honey for sale, and to whom I bequeathed the wreck of the boat. A few kraals had been passed, perched upon almost inaccessible heights overhanging the river; but the natives avoided us, and fled from our approach before we could get even within hailing distance of any of them. This evening, however, we arrived at Amabaya's kraal, and met with a warm reception from a rude but hospitable population, rich in pumpkins, millet, maize, dakka, ground nuts, and sun-dried locusts. This is another of the nondescript villages to be found on the Limpopo—a composition of people from surrounding tribes, the Makulaka element predominating. The men are dark, and affect scalp-locks as a prevailing coiffure, carry snuff-gourds, and wear the scantiest loin-cloths of leather as an apology for clothing. They are inseparable from their spears, bows, and poisoned arrows, and never move unarmed from their carefully stockaded villages, which are built on the hill sides under perpendicular cliffs, and in localities well chosen for defence. Indeed, in their general behaviour, they exhibit a prudence amounting to strong fear, and dwell in daily dread of their neighbours. They have no flocks, but depend for flesh on the chase, the low alluvial

lands abutting on the river yielding them large crops of *holcus* and maize, the surplus supply being converted into beer, the consumption of which appears to be the principal aim of their existence. Here we halted Sunday, the 14th, and loaded up the oxen with grain and pumpkins, which we purchased with beads and small clasp knives; but no offers could induce Amabaya to furnish us with a guide, and he drew a highly coloured picture of dangers ahead, which 'Mbata laughed at after throwing a series of lucky casts with his dice—a good augury, in which my followers had implicit confidence.

The greater part of the 15th was spent in the water. The hills rose precipitously on either bank, and the river ran through a succession of mountain-gorges. We crossed and re-crossed it *nine* times. Just before sundown, Madage, a chief on the right bank, whose villages are at some distance inland, sent a messenger to summon us to give an account of ourselves, and pay him a visit. Madage's men are principally Baromapulana, of Bechuana extraction, and are the dread of the surrounding villages. He oppresses all the right bank, and has been supported by the Boers of the Zoutpansberg district, whose policy has been to excite the various tribes in their vicinity into a perpetual state of hostility for the double purpose of procuring slaves and clearing the country around them. Elated by one or two successful forays, Madage styles himself "Chief of the River," and not only levies blackmail upon all who cross the ford near his hills, but has commenced annoying the white men, and threatening his old allies.* The Boers now find it impos-

* I do not wish for a moment to convey the impression that the Boers of the Transvaal generally are guilty of dabbling in slave traffic. I believe it to be confined to the outlying people of the Zoutpansberg district, and against them there is an accumulation of evidence that they would find it difficult to refute. As on the Zambesi with regard to the Portuguese, so in Zoutpansberg with regard to the Boers. The white men have raised up habits of warfare and plunder and the host of evil passions engendered by the slave-trade, and are now being paid in their own coin. The Zambesi is in revolt in the one case, and in the other the natives declare openly that "if the Dutchmen do not trek, then they will make them."

Elephant hunting was the great employment in this district, but now "few white hunters go in, as the risk is so great, not only of life from fever, &c., but also from the Kaffirs. . . . In every instance the Kaffirs take one tusk from each elephant, and sometimes demand more; and besides the best hunting-grounds are closed." (The quotations are from the '*Natal Mercury*,' December 22nd, 1870.)

I beg to state most emphatically that any Englishman can travel in these parts and on the Limpopo, and be well and hospitably received, *as soon as it is seen that he is not a Dutchman*; and the reason alleged by the tribes is "that the Boers make slaves, and the English pay for labour." Men travel down from Zoutpansberg, *via* Lipalale and Lorenzo Marques, to work in Natal, and I brought down six with me, who were under the guidance of a man who had already done three years' service on a sugar plantation in Natal. In Zoutpansberg itself, the Dutchmen complain that "as to labour, there is little or none to be got!" Madage, the chief, must not be confounded with Majahe, a chieftainess to the S.E.

sible to obtain labour, and more than half of them have trekked away from the district, which, although about 100 miles by 80 miles, does not now contain one hundred able-bodied men!

The messenger wore his hair collected in seven erect tails, standing in a line extending from the centre of the forehead to the nape of the neck, his skull being clean shaved; his arms and neck were covered with rings made of porcupine's quills, strung on sinew; and he was armed, as well as his followers, with a bow and arrows and a broad-bladed lance. A judicious present and a little food induced him to dispense with our returning in his company; and I marched long before daybreak, in case Madage should change his mind, and send a second party to fetch us.

Towards midday (on left bank), I reached the Bubge, running through a chain of basaltic hills in a thick bed of reeds, and almost invisible. Here we were badly received by a kraal paying tribute to the Mtatabele, the Chief refusing to show us the path down to the Limpopo, and turning out his people to laugh at our endeavours to find a ford across the river. He insisted upon my selling him powder, and accused me of having given both powder and lead to Madage; and my refusal to admit the accusation, or to give him ammunition, led to this display of bad blood on his part.

The only difficulty to be met with on the Limpopo arises from the extreme jealousy with which the various petty tribes regard each other; and any one trading in powder or lead would incur considerable danger in passing from one village to another. Very possibly his journey might come to an untimely end.

After crossing the Limpopo, we surprised a "knobnizen"—a wretched specimen of humanity, and a living testimony in favour of the Darwinian theory—without a vestige of clothing, tattooed with a line of knobs, bearing a striking resemblance to warts, extending from the roots of his wool perpendicularly down the forehead to the end of the nose. These unfortunate people inhabit small huts hidden away in the bush, and live by their bows and arrows, or upon edible roots, occasionally planting small fields of holens, and fill the social position of the Masaras and Bakalibari of other regions. Intensely black in colour,

* The "knobnizen" described here must not be confused with the Mindongues, who inhabit the coast regions from Cape Corrientes to the mouth of the Limpopo, and are wrongly termed by the same appellation. The Mindongues are great agriculturists, raising large crops, and also having large numbers of sheep, goats, and poultry. They also grow pine-apples and bananas, and supply Inhambane with a great amount of produce. They are friendly and very hard-working, but great thieves. Their chief, who lives at two days' journey from the Limpopo, is Inhambumbu. All the Mindongues disfigure themselves by tattooing their faces with double and often triple rows of "knobs."

with the everted lips and prognathous jaw exaggerated in character, they bear on their persons all the outward signs of want, abasement, and degradation. They are of inferior stature, small limbed, with large hands and feet, pot-bellied, and spindle-slanked. Starvation continually stares them in the face, and their life is one constant battle for existence.

'Mbata succeeded in assuring this man, who at first attempted to escape; and he put us on a path leading to the Livubu, found us water, near which we encamped for the night upon a ridge within four miles of the Limpopo, and then departed with a large pumpkin in payment of his services, apparently dumb-founded at his good fortune.

The Livubu—a clear, brawling river, with deep runs like a Devonshire trout-stream—we forded below a large village under a Chief, by name Makuleka, and regained the Limpopo, Sevombu narrowly escaping drowning in the drift.

On this day, the 17th, we met with a party of Umseila's men, who followed our line of march, and attempted to levy black mail upon us. The warriors were ten in number, well armed with assegais and large cowhide-shields, and attired in a picturesque war-dress of "feather-bonnets," leopard-skin "moo-chas," with tippets, armlets, and anklets of gnu's tails, and accompanied by about fifteen carriers. They presented rather a formidable appearance, and belonged to a war-party sent by Umseila in pursuit of a frail wife who had eloped from the Busi with a petty Chief. Crossing the 'Usabia and Limpopo, they surprised and killed the seducer in the Zoutpansbergen, and were now returning very flushed with success, taking the unfortunate woman back with them to suffer the particularly revolting form of death with which the Vatuas, Mavitis (and northern tribes of Zulu extraction) punish female infidelity in the higher circles of society.

They obliged us to halt at sundown near their temporary kraal on the river, and for some moments the position was difficult. The chief man of the party shook his assegai at 'Mbata, and I cocked my gun, which was lying across my knees, but, fortunately, no blow was struck on either side; and as soon as our fire was lit, and the oxen unpacked, they left us, promising with loud peals of laughter to pay us an early visit in the morning, and overhaul our goods, when they would judge for themselves the proper amount of "toosa" which they would accept. They then withdrew to their huts, the fires of which were distinctly visible from our bivouac. When the moon rose I awoke the men, and we loaded the oxen in the shadow of some large trees hard by, then, after piling up the fire afresh, moved off as noiselessly as possible. After stumbling through

high reeds, thorn-bushes, and long, wet grass up to our shoulders, we struck a footpath, and, steering by the stars, at daybreak found ourselves at the gates of a large kraal, where we had some difficulty in persuading the Maloios that we were friends, all the women and children, and some of the men, having deserted the village at the noise of our approach.

Here we were well treated, and procured a guide—for the first time since leaving the Shashia—who took us on to the Limpopo, where we halted in the evening (18th) below the embouchure of the Nuanetzi, far beyond the reach of our friends—the war party. It was unfortunate to have fallen in with them at all, and every allowance may be made for the conduct of Zulu tribes under similar circumstances, so that I write down the interruption merely as an unlucky accident with a good termination.

Many kraals are met with, and a fertile country, bounded by a distant range of sandstone-hills, extends between the Livubu and down the Limpopo to some distance beyond the Nuanetzi, peopled by Maloios (an offshoot of the extensive Amatonga family), paying tribute—nominally, I suspect—to Umseila. The men wear the Zulu “moocha,” or strips of leather or skins of wild animals suspended from a waist-band, and trailing down to the level of the knees, a few of the patriarchs being disfigured with a frightful row of knobs tattooed upon the forehead and face; but this custom is apparently falling into disuse. Necklaces and bracelets made from the bristles of the elephant's tail are common, and ear-rings are worn by both sexes, together with brass ornaments and beads. Some of the men had their wool divided and plaited down like the mane of a race-horse. They are very black, but their features are not unpleasing; and the men—well-proportioned, lithe, and active—are altogether a superior race to the Makalaka, or the inhabitants of the “mixed villages,” higher up the Limpopo (here called the Bembe). Many of the women are profusely tattooed upon the forehead, cheeks, and breasts, and wear decent petticoats down to the knees, the children to the age of nine or ten running about in a total state of nudity. The girls of a marriageable age adopt from the Matabele the narrow fringe worn round the loins, occasionally replaced by a strip of blue or white cottonade.

The kraals are neat, clean, well built, and shaded by trees, in marked contrast to the custom of the Zulu tribes, who cut down every tree near their villages with scrupulous care. The hemp-plant is largely cultivated, and the men are passionately addicted to “dakha,” both sexes and all ages indulging inordinately in snuff and beer, and the consumption

of these three luxuries occupies the greater part of their idle time.

Hunting is left mainly to the inhabitants of the left bank, cultivation and trade appearing more to the taste of the people on the Livubu. The men are the possessors of but few guns, and are more often to be seen armed with the pick than with the assegai or bows and arrows.

On the whole they are a well-disposed and hospitable colony, with a lively sense of their own interests, receiving the stranger well, but never "eastings their bread upon the waters," without the certainty of being repaid with a good rate of interest, and at the shortest possible date.*

IV.

From the Affluence of the Nuanetzi, down the Limpopo, to the Lipalule River.†—Occupied us ten days—from the 19th to 29th August. The land on the right bank (which was the one followed) is composed of rich, fertile soil, and is sufficiently raised above the level of the river to guard against fever and sudden inundations. Wild cotton is very abundant, and of singularly good quality, with a fair staple, growing frequently in bushes 8 or 10 feet in height, and infinitely superior to the wild cotton of Zululand, or that found on the Upper Limpopo.

On the 19th we passed a few small kraals, and followed the river on a S.S.E. course, running in a broad stream of open water, with a deep channel following the bank. Its rocky character had entirely disappeared, and from the Livubu the Bembe presented a more promising appearance.

The 20th, our path led through a forest country, where we passed several deserted villages, the inhabitants having moved across the river by order of Umseila; and a very lofty range, which the day before we had observed in the distance, now ran parallel to the opposite bank. On the 21st and 22nd, the

* Many people were seen marked with the small-pox. I fancy that, some years ago, when this disease travelled into the Matabele country, it must have passed by this line. In the Matabele, it was checked by an *ladana*, Kish, who burnt a village tainted with the disease, not a soul escaping from the conflagration. Cholera, I do not think, has advanced south of the Zambesi; but the Makwas have suffered very severely from it to the east and north-east of Mozambique. On the Zambesi, the small-pox has made frightful ravages. Elephantiasis, diseases of the chest, and intermittent fevers are most commonly noticed amongst the Makalaka and down the Limpopo. The Amatonga suffer from the venereal disease, but exanthematous diseases do not appear to have passed through the regions lying on the Lipalule, Lower Limpopo, and the Uncomogazi. Machen's town, Bamungwato, is contaminated with syphilis, and it is to be feared from there the scourge will pass through the Makalaka, Matabele, and Mashona.

† The name of Oori is discontinued here, and the Limpopo receives the appellation of "Bembe" or "Bempe."

left bank continued to be hemmed in by a succession of escarped mountains, our road lying over low hills, and broad undulating flats of forest land, the river still running in a deep, open channel.

One insignificant kraal of "knobknizen" * was passed on the 22nd, and on the 23rd and 24th, low, undulating hills, and a thick bush of prickly pear, cactus, and aloes, made the travelling very severe for the oxen. On the 25th, through the carelessness of my men, I lost an ox, which they allowed to stray into a nullah, where, finding the beast inextricably bogged, I was obliged to have him shot, and throw away part of his load—another serious loss of necessaries. The same night we slept outside the gates of a large kraal, and on the 26th and 27th, passed through fine forest land with an abundance of game. On the 28th, we took a path leading inland, and following the course of the Limpopo, at midday found ourselves brought up by a forest and a long line of marshes extending down to the river. Fortunately, we discovered two men hunting in the woods, who guided us over the morass to a large village on a low sandstone ridge, from which we descended into open, rich grass land, covered with large trees, through which the river wound majestically in an uninterrupted course far away into the distance—a splendid landscape, fresh, green, and painted with the most vivid tints.

On the 29th, through a continuation of this park-like country, we marched into a rich district, stretching away to the banks of the Lipalule, thickly peopled by Amatonga, under the government of Madumelan—a powerful Induna of Umseila's (the successor of Manicusse)—who commands the Limpopo from the affluence of the Lipalule, and collects the tribute paid by the kraals between the two great rivers—the Limpopo and the Uneomogazi (King George's River). The land is highly cultivated, sesame, maize, holcus, sweet potatoes, tobacco, manioc, the castor-oil plant, the hemp plant, and ground-nuts being raised in great quantities.

The Limpopo—from the Nuanetzi to the Lipalule, so far as I was able to judge—will afford, even at the driest seasons of the year, a navigable channel; and it would be quite practicable to use the river as a way of water communication, cargoes being towed in flats by steamers with a light draught of water. I followed the banks, and even the bed of the river for almost the entire distance, and did not observe any obstacles, neither did I find the main channel interrupted by shallows, although, as in many rivers, it veers occasionally from bank to

* See foot-note, page 20.

bank, following the bends and headlands which divert the main body of water in a new direction.

During and after the rains, traffic could certainly be carried on with ease; and I am not inclined to think the country unhealthy. In only one place upon the whole journey were marsh lands discovered, the river running invariably in a sandy bed between high banks, where the level of the waters in flood time could easily be traced, and the adjacent lands bore no signs of being subject to inundation. We had, on several occasions, to lengthen our day's march, in order to find an easy descent to the water's edge. The right bank also presents great facilities for the construction of a road, and the district being rich and alluvial—wild cotton grows luxuriantly, large timber borders the river, and the crops adjoining the kraals yield abundantly—it would, if colonised by Europeans, rapidly become a fertile and important centre, monopolising a considerable trade with the interior,—perhaps the ivory traffic with Umseila, and connecting with the Transvaal by two routes—the one *viâ* the Livubu and Zoutpausberg, the other *viâ* the Lipalule.

The dreaded "tsetse" was seen on the 19th and 20th of August, but in small numbers; and although my oxen were bitten, none of them experienced any bad effects. The two that arrived in Lorenzo Marques I sold for a good price; none the worse either from the "fly" or for their journey. I am inclined to think that only two small belts of "tsetse" exist on the Limpopo, in localities which I have marked on my route-map; and I also believe, as I have stated already, that the danger of the bite has been exaggerated. The natives do not believe it to be universally fatal, *unless the animal bitten is in low condition, and exposed suddenly to heavy rains*; and they laugh at the usual superstition that *any ox bitten* will eventually die as soon as he is exposed to wet weather. The beast must be predisposed from overwork and exposure to the reception of the poison; and a strong, healthy, good-constituted animal runs but little or no danger. Indeed, after careful inquiry and *actual experience*, I must state my opinion that I am a disbeliever in the traditions of the "tsetse"—an opinion shared in by my men, who, on leaving the Tati, held, together with myself, the most exaggerated belief in the dangers of the "fly."

Game of every description abounds—buffalo, elephant, rhinoceros (black and white variety), eland, koodoo, herds of impalab, gnu, and zebras, great numbers of waterbuck, giraffe, inyala, the wild boar (*Phacochoerus Æthiopicus*), the striped hyæna (*Hyæna crocata*), the cynhyæna, the wildehond, two varieties of the leopard (one identical with the Indian "cheetah,"

or hunting leopard, *Felis jubata*, the other *Felis leopardus*), the *Felis cafra*, *Felis caracal* (?), and other small representatives of the cat family, numerous lions—in fact, members of nearly all the varied fauna of South-east Africa inhabit the river districts.

The puff-adder (*Vipera inflata*), a tree serpent, resembling the Indian “dhamin,”* a species of cobra, and the python were the only snakes observed, millepedes being seen almost daily. Legions of frogs croak in nightly concert, and are particularly noisy on the bright moonlight nights. Locusts are eagerly collected by the natives, and when dried in the sun form a favourite article of food, which, when one's first antipathy to such fare is overcome, are by no means unpalatable.†

Large dragon-flies, and brilliant specimens of lepidoptera are seen in the vicinity of the water, whilst mosquitoes, midges, and other diptera and parasites—the curses of African travel—were nightly and unwelcome visitors, increasing in annoying power as we approached the coast, and as the hot weather began to set in.

Cormorants and fish-eagles poach the river; the white-necked raven, hornbills, green pigeons, parakeets, the hoopoe, night hawks, vultures, waders, Egyptian geese, and numerous waterfowl, several of the kingfisher family, the blue and the white heron, the stork, the francolin, the bush-pheasant, the grey and red partridge, quail, and an infinite variety of small birds, with gorgeous and striking plumage were daily to be met with.

A small grey monkey, and a little brown fellow with a venerable face, haunt the large trees on the river banks, and baboons inhabit most of the abrupt and escarped bluffs. Crocodiles are legion; but they fortunately have “the reptile virtue of prudence” very strongly developed, and, as fish and game abound, are not nearly so dangerous as native report represents them. Hippopotami are “under the shady trees, in the covert of the reeds and fens,” but are not found in as large numbers as on the rivers farther north.

The baobab ‡ is constantly met with in two distinct varieties, and, from the enormous bulk which some of the trees have attained, must date back for many centuries. Only one was seen which had fallen from old age and decay—a very giant of the forest. Euphorbia, four varieties of fig-tree, one of which reaches a large size, the graceful tamarind-tree, acacias, mimosas,

* Dendrophis?

† For two days in August we lived on these dried locusts—*faute de mieux*.

‡ Mowana—*Adansonia digitata*.

mopani, the "zuikerbosch,"* the dwarf date-palm, yellow wood, a species of toddy palm, stink-wood, iron-wood,† the flat-crown, the "kameeldoorn," the "haakdoorn," a variety of *Ficus elastica*, and the annoying "wacht-een-bietje" thorn, together with various wild fruit trees, some of which were entirely new to me, are the most prominent components of the woodlands.

The pale-blue lotus is not uncommon, and reeds and bulrushes border the water's edge in many places. The banks are fringed with waving, feathery-topped grass, occasionally mixed with the tall tambootie and dried-up "straw," whilst the prickly pear, aloes, caeti, and various thorn bushes compose the dense under-thicket. Hanging lianes, formidable hook thorns, and labyrinthine monkey-rope choke up the "beast-paths," and often caused us delay by overturning the oxen's loads. A magnificent yellow creeper, convolvuli, and various parasitical plants either entwine the gnarled trunks of the larger trees, or are to be seen fixed between the branches; and the flora, which, even at the driest season of the year (when I passed) is varied and brilliant, must, in spring time and after the first refreshing rains, be singularly attractive and rich in colouring.

The general aspect of the country on the right bank presents an undulating flat, sloping down from the distant ranges towards the Limpopo, occasionally interrupted or bounded by low hills, intersected only by two insignificant streams (hardly worthy of notice) between the Nuanetzi and Lipalule, and presenting a varying prospect of forest land and rich soil, thinly populated, and the habitat of large herds of game and wild beasts.

A coarse conglomerate, intermixed with a greyish sandstone, appears principally to enter into the composition of the rising ground nearest the river, the rounded contours of the general landscape being in marked contrast to the wild, bold scenery of the Upper Limpopo.

The district is well drained by deep nullahs and waterways (only one slip of marsh land being passed), and it appears dry and healthy, there being none of those great beds of decaying vegetable deposit which skirt the banks of the river nearer its source; for instance, at the Mariquá, Notwani, &c.

V.

From the Lipalule to the Uncomogazi River and the Town of Lorenzo Marques Delagoa Bay.—On the 29th our midday halt was made close to "the meeting of the waters" of the Lipalule and

* A species of protacea.

† The "pau-ferro" of the Portuguese.

Limpopo—a point already named by Mr. St. Vincent Erskine, who from here traced the Limpopo to the sea. I had now more than connected my journey with his; and as single-handed and without a boat I could make no practical survey of the lower waters and the bar, I determined to strike across the Lipalule, cross the Uncomogazi, and gain Delagoa Bay; reserving the mouth of the Limpopo until I could visit it from the sea, and prove whether the bar would permit light draught of water vessels to enter the river.*

The left bank of the Lipalule, where the long grass which hides numerous pit-falls for hippopotami makes the path extremely unsafe, was followed to the kraal and ferry of Iligungunyan, about eleven miles from the junction of the two rivers; and on the following morning my men crossed in a hide boat, the oxen swimming across. The water was beautifully clear, and running swiftly on a sandy bottom, the ford being breast deep, and the river about 250 yards in breadth. On the opposite bank we struck through a dense bush country, in order to reach the path leading from Madumelan's, on the Limpopo, down to the Uncomogazi. With the exception of two hours' halt, we marched until sundown and halted by a small pool, where elephants and a large herd of buffaloes came down to drink. The next day, the 31st, still travelling through the same monotonous jungle, meeting giraffe, gnu, pallah, and zebras on our way; we were without water until 3 P.M., when we found the path and an Amatonga kraal under Ritobi, who regaled my party with beer and dakhia, and presented me with a calabash full of fresh eggs, pressing us very much to pass the night in his village. We pushed on, however, and slept near Cunyana's; and on the following morning our two guides (from Iligungunyan's) left us. That day, September 1st, we travelled over undulating flats, and skirted the left bank of a river, the 'Nwetzi, running towards s.s.e.; halting on it after dark; beyond, a large group of kraals under Qualikoto, a thickly-populated, fertile, and flourishing colony. The 2nd September, crossing the same river three times (early in the morning, about three in the afternoon, and after sundown), we slept on its right bank, near the kraals of Ungwenia. Game very plentiful, and the lions roaring round our camp all night.

* Since writing the above, I have received trustworthy information with regard to the bar and entrance of the river. It has been used frequently as a place of refuge for slavers, who used to run up for a considerable distance, in order to avoid the British cruisers, and is described as an easily accessible river. See Appendix B with regard to this. Francisco Maria Bordalo, in his officially recognised work on the Portuguese possessions on the east coast, describes the river "as navigable for the small craft of the people of the country"—"*é navegado em almadias pelos naturaes do paiz.*"

The 3rd, Saturday, we reached Magud's, one of the principal chiefs of the Amatonga; a number of villages near a lake communicating with the Uncomogazi, the dark line of large trees skirting the river being about two miles distant from our camp. Magud, we learnt, had been summoned to the Busi River by Umseila, who was presiding over a council of his feudatories; but in his absence the acting chief of the kraal greeted our arrival with *empressement*.

As we approached the lake—a fine, open sheet of water more than a mile long—I observed a number of hippopotami in it; and, on offering to shoot one for my host, was laughed at, and told that only one white man had ever killed any of “Magud's cattle,” but that I might try my luck if I liked. Leaving the chiefs to talk with Mbata, and my dinner cooking, I walked down to the lake to bathe, and took my gun in my hand. I was fortunate enough to find a large bull hippopotamus, with his head and shoulders out of the water, yawning and clashing his jaws together; and put a ten to the pound bullet with six drams of fine powder right through his neck. In his dying struggles he crossed the lake into shallow water, pursued by four or five of his companions, who hunted him about and attacked him fiercely; the water all around them being white with foam—one of the most exciting scenes possible. When he was fairly dead they left him; and the Amatonga were in a perfect delirium of joy when they saw his huge, barrel-shaped carcase lying on the shoal; and when I presented him to the chief, and disclaimed all my rights to the meat, presents of eggs, fowls, maize, and sweet potatoes were showered upon me for the rest of the evening, and my popularity was firmly established.

Early the next morning, the 4th September, notwithstanding the crocodiles, a line of Amatonga, assegais in hand, entered the water and towed the hippopotamus into a small creek, where the division of the spoil took place. The screaming, fighting, and general confusion over it was deafening; and at last a man was dangerously speared through his face and neck, and carried away seriously wounded—a trifling incident which almost passed without being noticed.

In the afternoon I succeeded in marching, although I was begged hard to remain and shoot another of “Magud's cattle;” but I was anxious to cross the Uncomogazi, in order to make an early start the next morning. Magud farms the ferry to a small chief on the river, and he drove a terribly hard bargain with me. I gave him the last piece of cloth, the last knife, and the last string of beads I possessed, and then was obliged to add ten bullets and half of my last canister of powder, and my own pocket handkerchief, before he would embark us. The “zeekoo”

meat, of which he carried an immense piece, had evidently not inspired him with either gratitude or forbearance. He had got "a good thing" and was determined to make the best of it.

The boat in which we were ferried across was hollowed out of the trunk of an immense tree, and carried my baggage and eight men with ease in addition to the two Amatonga, who managed the navigation with considerable skill and great knowledge of the banks, currents, and back-tow.

From the ferry to the sea the natives call it three days' journey; and here this magnificent river is running in a navigable channel of deep water for almost its entire breadth of 600 yards. Yet, although it falls into Delagoa Bay, almost within sight of Lorenzo Marques, the Portuguese absolutely turn it to no account; and, until quite recently, had not the least idea of the direction it took, of its importance, or whether it was connected with the Limpopo or not; contenting themselves with using a few small boats, in order to go up as far as the villages of Maragouin and Magud."

The river is known by the various names of the Uncomogazi, Comatie, Uncomanzi, Uncomogatie, King George's River, Uhlwundhle, and the Manissa (properly Maniça); and the curious manner in which it has been confused with the Limpopo, and the Limpopo with one of its affluents—the Mariqua—is proved by a quotation made by Mr. Cooley (he quotes from *Burchell*, I think), in which the following statement is made:—"Numerous rivers flow rapidly towards the east and north-east, through the country of the Marútsi, who are separated from the Maquaina, in the latter direction, by a great river, called Makatta. This is the river called Mariqua by the colonial traders, and which there is reason to suspect is identical with the Mannees, or King George's River, of Delagoa Bay."

It fell to the perseverance and good fortune of Mr. St. Vincent Erskine to carry down the Limpopo from the affluence of the Lipahule to the sea, and prove it to be the river laid down on Captain Owen's chart as the Inhampura; and I believe my friends, Carl Mauch and Erskine, divide between them the honour of tracing the upper waters of the Uncomogazi. The river called by the natives the 'Nwetzi, which I followed on the 1st September down the left bank, and crossed three times on the 2nd September, finally halting on the right bank, beyond the kraals of Umgwema, I have no doubt is an affluent of the Lagoa River; for the natives assured me that it did not join either the Lim-

* Orders have recently been issued by the Government, directing the steamer *Quillmaine* to survey the mouths of the Inhampura and Maniça; but she is at present conveying the Governor-General on a tour of inspection down the coast.

popo or the Uncomogazi, but was the affluent of a distinct river which fell into the sea about midway between the other two.

Turning our backs on the large trees bordering this fine river, our path led through a thickly-wooded grass country,* where lions gave us some trouble during the night; and on the 5th we crossed the Itobe, a swampy stream, and saw in the distance the smoke of Quasilinda's, a considerable group of scattered villages, which are the usual stage from Magud's ferry. However, I was getting impatient, and we slept that night at the Quanyambé, ten miles farther on our road; awaking in the morning dripping with the moisture of the heavy mist hanging over the swamps.

We had to make a detour of about four miles, in order to turn the pool of brackish water, surrounded by tall bulrushes, from which the Quanyambé marshes rise and stretch towards the south. In the basin of this pool, and on the margin of the marsh, are considerable incrustations of salt, which the inhabitants of the adjacent villages told us were renewed every dry season. They collect and roughly purify the salt, which they send up the Uncomogazi, and barter for tobacco, dakhla, millet, and fowls. The marshes extend to the Uncomogazi; and the natives we saw were badly-clothed, unfortunate-looking individuals, whose physical and mental qualities have evidently deteriorated from the debilitating effects of fetid and muddy water, and a life-long residence in the malarious exhalations of a low, pestiferous, and swampy valley.

After leaving this valley, the same day (6th September) brought us to Quonquondyan's, upon a clear, bright river, running in a winding stream, embowered and overshadowed with tropical foliage—palms, bananas, and large ferns; but infested with legions of mosquitoes. This we crossed in the evening; and from our halting-place—Nondwan's villages—on the following day, made a long journey down to, and descending the right bank of, the Uncomogazi (past the kraal of Maragonin), arriving early the next morning in pouring rain at the gates of Lorenzo Marques, where the sentry appeared to have some scruples in admitting a party† headed by a white man dressed in an old leathern kilt and gaiters, considerably travel-stained, and

* Calabash trees line all the paths in this part of the country.

† Near Qualikoto's kraals, we fell in with six men travelling down to Natal from Zoutpansberg district, in order to obtain work, and under the guidance of one of their tribe (Baromapulana), who had already worked for three years in the colony. I fed them, and brought them with me as far as Lorenzo Marques, where I got them permission to go through the adjoining district. Had I found a vessel in the port going down to Durban, I should have sent them by it. They told me none of their people would work for the Boers, but that they would all work for the English. Why?

rather excusably over-excited at his safe arrival at the sea-board.

The main part of the country travelled over from the Lipalule presents an arenaceous aspect, and consists of a succession of easy undulations and rounded sandstone hills, traversed towards the line of the Limbombo Mountains by protrusions of trap. A succession of low valleys, in which a few fossil shells were found with sandy and calcareous shales, would suggest a period when these valleys formed part of the ocean bed, and the sea possibly rolled up to the foot of the Limbombo. On the rivers, a soil rich in vegetable matter, and capable of constant irrigation, richly repays the agricultural labours of the Amatonga, who raise large crops of millet (the "staff of life" of South-east Africa), rice, maize, manioc, the cane called 'mphie, sweet potatoes, sesame, ground nuts, pumpkins, castor-oil plant, tobacco, and Indian hemp, as well as onions, cabbages, bananas, oranges, and limes. Sugar-cane, cotton, and indigo have at various times been planted on King George's River, and have succeeded well, but apathy, want of management, and incessant intrigues have led to the utter neglect of even the plantations established near the village of Maragouin—one day's journey from Delagoa Bay.

The ridges running parallel to King George's River and extending to the heights commanding Lorenzo Marques are bounded by dead flats, and between the vast sea of reeds fringing the river's banks and these bluffs lies a strip of peculiarly rich soil, admirably adapted for the cultivation of cotton, and which at present yields to the natives extraordinary returns in holens and maize.

The principal trade at Lorenzo Marques is in the hands of the French house of M. Fuvre of Marseilles (M. Régis, aîné of the same city, is also establishing a branch-house), and of the Banyans from Diu. Things have changed mightily since in 1823 "the Leven and Barraconta saw a caravan of 1000 traders with 300 or 400 tusks and many cattle" arrive at the factory. Elephants are scarcer now and have moved up towards the Usabia and Busi, and the main trade consists in the purchase of ground nuts and gingelly seed, orchilla weed, bees wax, and a little ivory, against which are bartered powder, guns, striped white and blue cottonades of Swiss manufacture, beads and brass wire. The caoutchouc tree (*Ficus elastica*)* was frequently met with on the Limpopo, but this product invariably finds its way

* The "bolscha" of the Portuguese. Three distinct varieties exist,—one a parasitical plant resembling a wild vine, the other two being small trees. I forwarded some of the seed from Inhambane to Natal in November last.

to the port of Inhambane, and I do not think much of it reaches Lorenzo Marques.

The gingelly seed—*Sesamum orientale*, the “siritch” of the Arab traders of Mozambique—bears a pale white flower (one variety a purplish-blue flower), and is too well known in India and Egypt to require any description.

The ground-nut (*Arachis hypocarpoea*) is found from the Shashani River to the coast. It is a plant of the pea family with a heart-shaped leaf, bearing a yellow flower, and introducing the pod which succeeds the flower into the earth, in order to ripen the seed—hence the name of ground-nut. It is exported in bulk to France, and there the oil extracted from it is extensively used for machinery and the fabrication of soap, the gingelly seed being more in request for the manufacture of salad oil.

The bark of the mimosa is largely used by the natives of the interior and the Boers as a dye, but I do not think has yet become an article of export; it produces the colour known in India as “khakee-rung.” Another untried article of commerce might be found in the black mangrove, which I believe can be turned to valuable account for tanning purposes. “Copra,” the dried interior rind of the fruit of the coco-nut palm, is also bought in great quantities at the other French factories at Inhambane, Quillimane, Mosambique, &c., although there is very little of it in the vicinity of Lorenzo Marques.

The town is built on a whalebacked sandilat, nearly surrounded by water at low tide, and entirely commanded by the neighbouring heights from which the natives from time to time have threatened the Portuguese with comparative impunity.* It is surrounded by a wall, and defended by three bastions fronting the land, and a bastion at each extreme angle, from which stockades and piles run down into the sea, beyond low-water mark, as additional securities against attack. Each bastion mounts a gun on a traversing platform, and the works have been lately repaired, but the same old useless honeycombed cannon (16 in number) remain, and the feeble garrison, consisting of about 120 soldiers (principally negro troops, with a few Europeans), serves as a temptation to hostilities on the part of the

* The present Governor, Major J. S. Simas, is a man of great energy and capacity, and has done an infinity of good during his government,—improving the town, fortifications, and approaches; and also convincing the natives that they have, in him, to deal with a good soldier, who can act with both firmness and determination. A very handsome sword of honour was presented to him by the town for his able repulse of the last attack made by the neighbouring tribes. The hospitality shown by Major Simas to all travellers and strangers arriving at Lorenzo Marques is proverbial on the coast.

surrounding tribes, who occupied the heights and besieged the town not many months before my visit.*

In 1833, Lorenzo Marques was captured by the Vatuas,† and the Governor taken prisoner and killed on Shesua Island in Delagoa Bay, opposite to the embouchure of the Umcomogazi. Subsequently retaken, hostilities again broke out in 1841, and in 1843 the Portuguese, taking the part of Manicusse against the chief of Magaya, experienced a serious reverse. In 1845 peace was made, but a few years afterwards internal seditions again threw this unfortunate establishment into a state of disorder, which unhappily would appear, with occasional intervals, to be prolonged up to the present day.‡

A half-ruined fort, a "place d'armes," around which the best houses and the custom house are built, and three parallel streets, connected by narrow lanes, compose, together with a few detached buildings, most of them in a state of decay, the town of Lorenzo Marques. Banyans, half castes from India, a few Europeans, Mulattos, the mixed soldiery, and a large number of slaves constitute the population of this port,§ situated in a magnificent bay watered by five rivers, two of which, the Umcomogazi and the Maputa, are certainly available as means of communication with the interior, a fact which apparently has failed to strike the Portuguese, who know but little of the surrounding country. ||

* This was the attack so successfully repulsed by Major Simas, previously alluded to.

† Name given by the Portuguese of Delagoa Bay to tribes of Zulu origin.

‡ It will be as well to quote my authority for these statements. Francisco Maria Bordalo, in his officially recognised work entitled '*Ensaio sobre a Estatística de Moçambique e suas Dependências na Costa Oriental da Africa ao Sul do Equador*,' writes as follows respecting Lorenzo Marques: "Em 1845 ultimou-se de todo a guerra; mas poucos annos depois vieram as sedições internas continuar a desordem do malfado estabelecimento, desordem que, com intermitencias, se tem prolongado infelizmente até hoje." The author also condemns the position of the town and fortress: "collocado como está o presidio em uma linguaeta de areia, banhada pelo rio do Espirito Santo, pôde soffrer de um momento para outro o ataque de cafres desleaes, que o circam por todos os lados, e que mais de uma vez tem mostrado aos nossos a sua decisão e ferocidade."

§ The population of Lorenzo Marques in 1858 consisted of 73 Europeans, 1 American, 12 Asiatics (Christians), 39 Banyans, Moors, &c., 368 natives, 276 women (natives), and 384 slaves of both sexes: total, 688 souls. At the present day, the European population is greatly reduced, and the slave population increased in numbers. I do not believe there are 20 Europeans now living in the town.

|| I am not inclined to place any reliance on the construction of the projected road, by which it is proposed to connect Lorenzo Marques and the Transvaal. Major Simas showed me the line which is to be adopted, upon an excellent map made by Carl Mauch (who was in Delagoa Bay a short time before my arrival). But the Portuguese will certainly never construct any such road themselves; they have neither engineers, men, nor money, nor have they much influence with the tribes through whose lands it will be necessary to pass. I do not think it

To the incessant intrigue and the evil passions aroused by the ancient slave trade, to the incapacity, apathy and want of vitality of preceding governments, and to a general dearth of money, must be ascribed the condition of the Portuguese possessions on the East coast of Africa. Powerless in the interior, the Zarahesi is daily slipping away from their hands, and a general feeling of uneasiness is everywhere observed. There is an entire want of confidence in the Quillimane district, and for the moment progress on the finest river of East Africa is a myth, and the interests of civilization are on the wane!

The entire district from the Lipahule to Delagoa Bay is inhabited by Amatonga,* and by the men of Madumelan and Umseila†—the latter the paramount ruler of the entire country from the Uncomogazi to the Busi, and the chief of the government, often styled in maps as "Maniense" or "Schoschongaan." The customs of the Amatonga (who pay tribute to Umseila through his powerful vassal, Madumelan) frequently bear a strong affinity to those of the dominant races, the Amazulu, the Amaswazi, Vatuas, and Maviti of Umseila. The men wear the head rings peculiar to the Zulu tribes, and the government of each kraal is directed by its respective chief, responsible only to Umseila. In agriculture they excel, but in courage, hunting, and in war, are far behind their conquerors; yet their delight is in the war-dance, and they affect the great warrior with

probable that the Transvaal Government will carry out the idea single-handed; and the probability is that the scheme will rest in *nubibus*, unless a company should be formed which would undertake the task.

* The Amatonga extend from Zululand proper to the Busi (and Zambesi?). (Tonga in the singular; Amatonga, Batonga, Butonga, varied forms in the plural.) The subdivisions of the great family of Amatonga resemble each other, in the main, in manners and customs,—the dialects undergoing occasional variation. From the Uncomogazi to the Busi, it is a conquered race, paying tribute either to Madumelan, Umseila, or the Portuguese. The tribes of Zulu origin are the real rulers of the interior,—the Vatuas, Maviti, Mapiziti, and Makúá, as they are variously styled by the Portuguese,—but a gradual assimilation of races is taking place, the Zulus choosing their wives and concubines freely from the original possessors of the soil.

† Maniense (or Manicua) is dead. Maowéwé, his son, is in Swaziland. Neopango, Chiono, and Mudan, three other sons, are dead. Umseila, Cullo, and Pirane, by the same mother, divide the ancient government of Maniense between them,—Umseila being the head of the family (he is, however, jealous of Cullo, and keeps him under his eye),—Pirane ruling the country in the neighbourhood of Inhambane, and Madumelan the Limpopo, whilst Umseila reserves for himself the Umbia and Busi, and at the same time looks after Cullo's lands farther to the N.W. The Dutch call this the government of Schoschongaan, and the people under Madumelan are called by the Portuguese "Landeens" (or rather Landines). Francisco Maria Bordalo, from whose work I have previously quoted, adds his testimony to the power of Maniense (viz. Umseila). He is describing the difficulties of the position of Lorenzo Marques, with Panda and the Amazulu on one side "ao septentrão o Manicua, chefe dos Vatuas, do norte os Landins; o domínio d'este ultimo estende-se até muito longe pelo sertão dos districtos de Inhambane e Sofala"—a candid statement of the truth.

tolerable success, arraying themselves in all the paraphernalia of ostrich plumes and leopard-skin "moohas," and carrying the shield and the assegai with almost as bold a swagger as their prototypes. Perhaps this difference may be accounted for by the fact that the Zulu lives mainly on beef, and that the Tonga does not own a single head of cattle. 'Mbata used to point with a sneer at their flocks of poultry and call them "Amatonga oxen!" But in beer-drinking they hold a proud pre-eminence, the 'utelwalla—the pombé of the Mankias farther north—they both manufacture and consume with the greatest industry, and the large conical beer-vats are many in number in every village, and continually resounding with the noise of the heavy log pestles with which the women bruise the holsus and keep time to an unremitting chant of constant repetitions. "Dakha" they inhale through a bamboo of some four or five feet in length, with perforated joints, and to the abuse of this powerful stimulant, as well as an excessive indulgence in tobacco and snuff, they are universally addicted. Every man carries a snuff-purse, and on meeting a stranger, snuff is offered before any questions are asked or any salutation is made. In the manufacture of baskets and mats they are exceedingly clever, and with a small adze work both neatly and ingeniously in carving hard wood for pillows, beer-vats, bowls, &c. They are good walkers, but inextrigably lazy, and we invariably walked down our guides on the road. Loquacious to a degree, they never speak the truth, and the commonest phrase that catches the ear at every turn is "'Manga!" (or Amanga)—equivalent to "I cannot believe you!" A statement is made; the reply is "'Manga!"—"You are going to march?" "'Manga!"—"You propose smoking?" "'Manga!"—"It is hot?" "'Manga!"—In fact, 'Manga is the shibboleth of the race.

Both men and women are darker than the Amazulu, less muscular, and with coarser-cut features. Inferior in the point of good looks, they are decidedly below the common level with regard to morality. Stealing is not uncommon, and hardly regarded as an offence, and promiscuous intercourse between the sexes is the rule and not the exception, the rigid virtue enforced by bodily fear (a régime which succeeds admirably among the women of the Zulu tribes) being unpractised amongst them. A girl is only liable to punishment should she bear a child before becoming the legitimate property of a husband, duly purchased with cottonades or ivory; but no attention whatever is paid to her conduct before marriage, and the greatest liberty of action is tolerated. At Magud's we were besieged and annoyed by women, who came down to our camp after the men had retired for the night, and at Ritobi's the chief himself offered me the

choice of several rather good-looking damsels as an inducement to remain until the following day in his village!

Nearly all the women disfigure themselves by tattooing a double line of warts across the forehead, joined by a curved line on either cheek, and occasionally a double or even triple row of lumps and stars across the upper part of the bosom, or an elaborate pattern on the abdomen,* and some few men adopt the peculiar ornament of "knob-nuizen."† The men wear "moo-chas" of deer-skin, leopard-skin, and sometimes strips of blue cottonade. Both sexes eagerly purchase blankets to replace the leathern skins, which serve them both for bedding and for cloaks. The women are decently attired with blue or leathern petticoats; girls, up to the age of puberty, wearing the simple bead-fringe. Plaited grass and brass or iron ornaments are worn as bracelets, necklets, and anklets; fragments of wood, elephant's-bristles, serpent's skins, pieces of antelope's horn, and porcupine's quills, being the prevailing fashion in amulets. The women file their front teeth and indulge in a variety of fashions with regard to the arrangement of their woolly heads, young girls shaving the skull until the ceremony of seclusion and the change of costume is completed.

Their creed is that of the Amazulu, Makalaka, and of South-Eastern Africa in general. They have a faint belief in one supreme power, but have no form of worship or any tangible religion, only an uneasy feeling of superstitious dread, a morbid fear of evil influences, of being bewitched, of the "evil eye," and of the shades of the dead. The departed is popularly supposed to visit his old dwelling in the form of a serpent; and to kill a snake within a kraal is a crime which will certainly entail the sudden death of one of the inhabitants. Nothing of importance is undertaken, no hunting-party or journey is set on foot, without the "sorcerer" of the kraal appointing the favourable moment. Crocodiles they have no fear of; a man must have committed an unpardonable sin to be bitten by one. "Wizard-discoverers" are implicitly believed in, many people being impaled and speared on charges of witchcraft promoted by them. An intense susceptibility to impressions renders them blindly suspicious, and accusing an individual of the "black art" is sufficient to raise the public voice against the defendant, who does not himself expect to meet with fair play, and not uncommonly admits his guilt, perhaps more than half persuaded to do so by the force of his own traditionary prejudices!

* All the women (in common with the whole of the tribes of South-East Africa) adopt the hideous fashion of elongating their breasts by firmly tying a band across the upper part of the bosom.

† There is no universal tribe-mark used, but parents invariably mark their children when infants. I have seen several deeply branded on the shoulders, breasts, or arms; and I fancy the custom must have arisen in the slave days, and have been used for identification.

Their musical instruments are few in number. The rude lute, consisting of a bow of hard wood, strung with gut, to which is attached half of a calabash, is the one most commonly in use, and is played sometimes with a bow, but more often with the fingers. Both this and a rude description of jew's-harp are common to both the Amatonga and the Makalaka, and indeed were seen all down the Limpopo. A few rude drums and trumpets, made of koodoo-horns, were observed near the Uncomogazi; but the dances and songs appear to be all plagiaries from the Amazulu, or very inferior productions. The indecent dances, so common at the "batucas" of the shaves in the Portuguese districts, are seldom witnessed in the interior, and would appear to be exaggerated in character the nearer they approach to semi-civilization. The famous war-chants and dances of the Amazulu become poor imitations both in the hands of the Amatonga and Makalaka tribes.

Thoroughly afraid of the Amazulu, and always ready to furnish Umseila with women for his warriors, the Tonga has not quite learnt to respect Lorenzo Marques, or fear the Portuguese, whom he describes as "a man who travels in a litter, and is afraid to come openly up to a kraal to trade!" The Boer he both fears and hates, and with regard to the Englishman, he is excessively fond of his money, and very ready to work in order to earn it!

In conclusion, a few words on the climate of Lorenzo Marques, so dreaded in the Transvaal and Natal on account of its supposed fatal effects on Europeans. The large rivers bring down, during flood time, an immense deposit of decaying vegetable matter, and the heavy rains which succeed great heats, the nightly dews, and the exhalations produced by a powerful sun, all constitute natural causes which tend to the insalubrity of Delagoa Bay. Add to these predisposing causes the very position of the town itself, surrounded by a pestiferous marsh, and there is more than enough to account for "coast fever."

Any abuse of strong liquors and any excesses are rapidly followed by fever: but men in good health, who are even moderately careful with regard to their diet and morals, need not regard a visit to the Eastern coasts with fear. If the town of Lorenzo Marques was removed to the heights which command it, where the inhabitants would enjoy the benefit of the sea breeze, I believe that more than half the sickness would disappear, and astonishment at the want of forethought and judgment which could have selected so unfortunate a site, both in a sanitary and a military point of view, is the first impression experienced by all new arrivals. The invariable system of the early Portuguese explorers has been to place water between all the ports and the mainland; hence the mistake, a fatal one with regard to the public health, and a still more fatal one to prestige.

APPENDIX A.

DATES, DISTANCES, AND NOTES OF THE DAILY STAGES MADE ON THE JOURNEY.

I.—FROM THE TATI SETTLEMENT TO THE TATI, SHASHA, AND LIMPOPO RIVER.

NOTE.—Tati Settlement. Observations of Mr. BAINE, F.R.G.S., lat. 21° 27' S., long. 27° 40' E.

Date.	Mode of Travelling.	Number of Hours.	REMARKS.	Estimated Distance in Miles.	Estimated direct Distance in Geographical Miles.
1870. July 6	Wagon	7½	From the Tati Settlement to the Ramakhaban River—measured distance 19½ miles	19½	15
.. 7	..	1½	Crossed Ramakhaban and Impaque (affluent of Ramakhaban), on leaving the Camp; 1½ hours to cross Inquesi River	5	
.. 7	..	8½	From cross Inquesi River to cross Satsuke River, and halt. The range on junction of Ramakhaban and Shasha bearing S.E.E. (mag.)	22 14	
.. 8	..	5	To cross Semookie River, running to South		
.. 8	..	4	To small rocky spruit with a well on right of path, and halt (road passed under a number of isolated koppies)	10	
.. 9	..	5	To halt on the Shashani River, running to S.W.	14	
.. 9	..	4	To halt in the jungle. No water to be found	10	
.. 10	..	5	To halt in the valley of the Sapi on Sapi River, with Madume's hill and kraal, bearing S.E. distant about 2 miles	11	
.. 11	On foot	4½	To Uvula's kraal on small stream. (The 11th, 12th, and 13th halted at Madume's for boat carriers, 14th half a day's halt for ditto)	10	
.. 15	..	8	To halt on the Tuli River; crossed small stream near Uvula's, and passed kraals on high hills on right of path at three hours	20	
.. 16	..	5	To halt on the Tuli, right bank, opposite a hill with a single baobab, and a distant koppie resembling the "Logan Stone"	9	
.. 17	..	1½	To halt on the Tuli; river falls into a circular basin, very deep and surrounded with high rocks; finely wooded country	3	
Carried forward				117½	15

FROM THE TATI SETTLEMENT TO THE TATI, SHASHA, &c.—*continued.*

Date.	Mode of Travelling.	Number of Hours.	REMARKS.	Estimated Distance in Miles.	Estimated direct Distance in Geographical Miles.
1870.			Brought forward	147½	15
July 18	On foot	7	To halt on the Tuli, right bank. The distant range beyond M'nsindami's visible		
" 19	"	7	To halt on the Tuli, right bank. Camp at M'nsindami's hill and kraal, opposite large hill on left bank. " Baboon Hill "	7	
" 21	"	7	(20th, halt to fetch meat.) At six hours crossed river to the left bank above a considerable fall. Halt on left bank: on right bank high hills	7	
" 22	"	10	Eight hours to the Causeway and Falls of Masiringi. River descends by deep gorge into lovely valley, where we halted on left bank	9	
" 23	"	3	To the Shasha at point of affluence of the Tuli; halt on left bank of Shasha at junction of two rivers: vast sea of reeds	11	
" 24	"	7	To Selika's kraal on left bank of Shasha. (25th, compelled to halt in consequence of disputes with carriers)	12	125
" 26	"	5	To halt on small stream running into Shasha on right bank	11	
" 27	"	1	To opposite Umsinye's hill and kraal on left bank	10	
" 27	"	4	To halt under peculiar isolated hill on left bank	2	
" 28	"	6	To halt on left bank at M'zamban's kraal and stockade	9	
" 29	"	5	To halt on right bank at Neombusi's kraal and stockade. Hills beyond the Limpopo visible from camp	12	
" 30	"	4	To point where the Shasha divides into two branches, the upper the w. branch, being called the Shasha, the lower, the Tuli	11	
" 30	"	1	Down the upper branch, Shasha, to halt on left bank Limpopo at affluence of Shasha, on the ground between the two branches, Shasha and Tuli (31st July, halt.)	8	
				2	35
				258½	175

II.—AFFLUENCE OF THE SHASHA RIVER, DOWN LIMPOPO, TO FALLS OF TOLO-AZIME.

NOTE.—Approximate position of Tolo-Azime, lat. 22° 37' S., long. 36° 53' E.

Date.	Mode of Travelling.	Number of Hours.	REMARKS.	Estimated Distance in Miles.	Estimated direct Distance in Geographical Miles.
1870. Aug. 1	In boat	1½	To the lower branch, the affluence of Toli; deep water — drift below Tuli waist deep; high hills on either bank	15	
.. 1	..	2½	Precipitous cliffs on either bank, with occasional openings; two peculiar white cliffs on right bank		
.. 1	..	2	To range on right bank, gradually receding from river		
.. 1	..	2½	To halt on right bank, opposite escarped hill on left bank	12	
.. 2	..	5	To affluence of Ipage River from S.W. through gorge in considerable range. (Boat upset by being driven under a tree)		
.. 2	..	2	To halt at Itepa's kraal on right bank, opposite high escarped range of hills ..		
.. 3	..	5	To halt at Mafelagure's kraal on right bank; kraal on affluence of Injelade (Hout) River	10	
.. 4	..	5	To "Granite Stairs" and "Baobab Hill," two very remarkable kopjes on right bank		
.. 4	..	4	Down numerous rapids to halt on right bank. River at camp divided into three channels by two wooded islands; rapids and rocks everywhere; highlands on left bank; thickly wooded country everywhere		
.. 5	..	1	Running down the rapids to open clear water again	25	
.. 5	..	5	River clear for only a short distance, then numerous rocks, rapids, and sea-cow pools, to affluence of 'Mzinyani River ..		
.. 5	..	2	From affluence of 'Mzinyani River to Island at the head of the Falls of Tolo-Azime		
.. 6	On foot	1	To encamp below the Falls and the basin, under an immense tree on the right bank near the river, the only large tree on the right bank near the river. (August 7th halt, and August 8th halt for half the day)	2	60
				85	60

III.—LIMPOPO, FROM FALLS OF TOLO-AZIME TO AFFLUENCE OF BUBGE, LIVURU, AND NUANETZI RIVERS.

Date.	Mode of Travelling.	Number of Hours.	REMARKS.	Estimated Distance in Miles.	Estimated direct distance in geographical Miles.
1870. Aug. 8	On foot	6	Down the right bank, skirting low range of hills. On opposite bank high range and sloping grasslands, with immense baobab-trees, past cornfields which had been inundated, and a deserted kraal, one mile beyond which we halted on right bank		
" 9	"	8	Divided into three equal marches. The first past a deserted kraal, by bye-path to strike the Limpopo again, which had made a rapid bend. The second to cross small stream from s. The third to camp with lofty spur of the Zoutpansbergen, bearing s.	12	
" 10	"	8	To halt on Limpopo, one mile beyond the Tave River, an affluent running in from s.w. Deep, clear, rocky stream, between high banks. At 3½ hours passed small kraal on right bank (high range on left bank), and at 5½ passed kraal on isolated hill on left bank	16	
" 11	"	4½	To immense extent of reeds on left bank. River very broad, and from this point running in rapids. These reeds cover the affluence of a large river, the Subichaul?	16	
" 11	"	3	Round sudden bend. River changing direction from E. to N.E. and S.E.	10	34
" 12	"	7	Skirting "Lions' Causeway," cross stream running in from s. at one mile. River running between hills. Very difficult travelling for the oxen, to cross river breast deep at sundown to left bank, and halt under a baobab-tree, opposite high escarped range on the top of which were perched several villages. The position of Lions' Causeway should be nearly identical with a spot marked "Minga" on Petermann's map, but the country is completely deserted.	5	
" 13	"	5½	Exceedingly difficult rocks, escarped hills, succession of falls and rapids. Bed of river strewn with large hornblende boulders	17	
" 13	"	4	One and a half mile of difficult going, then down open valley and sandy bed of river to the kraal of Amabaya on left bank (14th halt)	5	
			Carried forward	90	34

LIMPOPO, TO AFFLUENCE OF BUBGE, LIVUBU, &c.—continued.

Date.	Mode of Travelling.	Number of Hours.	REMARKS.	Estimated Distance in Miles.	Estimated direct Distance in Geographical Miles.
1870. Aug. 15	On foot	9½	Brought forward Crossed and recrossed river nine times, escarped hills and a succession of gorges, past Madaja's villages to halt on left bank	20 22	34
.. 16	..	4	To large kraal on Bubge River (tributary to Matabele) half an hour's walk from affluence of Bubge River	12	53
.. 16	..	4	Cross Limpopo to right bank opposite affluence of Bubge River, and halt on small stream in valley running down to Limpopo	10	
.. 17	..	3	To cross Livubu (Sevombu nearly drowned at the ford) above small falls, and a mile below the kraals of Makuleka	9	
.. 17	..	1½	To strike Limpopo below affluence of Livubu	3	12
.. 17	..	2	To camp on Limpopo continuing down right bank	6	
.. 18*	..	2	By night, past numerous kraals to halt at a large kraal of Maloia	15	
.. 18	..	4	To halt at kraals on small river running into Limpopo (right bank)	10	
.. 18	..	4	To halt at kraal (right bank), two miles below the affluence of Nuanetzi River, apparently running in from S.N.W. ..	10	20
				187	119

* Fourteen hours' march in order to avoid a collision with a war party of Umasella's men. We marched when the moon rose, and, with two halts, the whole of the day.

IV.—LIMPOPO, FROM AFFLUENCE OF NUANETZI RIVER TO AFFLUENCE OF LIPALULE RIVER.

NOTE.—The right bank of the Limpopo was followed the whole distance. CARL MATH'S positions for Babge and Livubu were adopted. The mouth of the Nuanetzi is considerably lower down than placed by him.

Date.	Mode of Travelling.	Number of Hours.	REMARKS.	Estimated Distance in Miles.	Estimated distance in Geographical Miles.
1870. Aug. 19	On foot	7	At three hours passed small kraal, and at four and a half two kraals. Entered forest country, abundance of game. Considerable range visible in distance on opposite bank. High ground at halt on right bank, behind camp. Buffalo and Tsetse fly seen	18	
" 20	"	4	At two hours passed small kraal (inhabited), and then a deserted kraal, river in broad, deep, navigable channel from Nuanetzi (from Livubu?)	16	
" 20	"	2	To deserted kraals on right and left of our path. Distant range has now closed on left bank. (Tsetse fly seen)		
" 20	"	1½	To halt on river (running due s.) high range and precipitous banks on left bank. High sloping ground on right bank		
" 21	"	5½	Over low sandstone range, descend into grassy plains. Camp on river under trees fringing the bank. Game abundant. Range above range close in the left bank, and beyond our camp the hills on right bank approach the river and turn it to e.s.e. Wild cotton the last two days in extraordinary profusion. (Half a day's halt made)	15	
" 22	"	4½	Round foot of hills and bend of river, forest, bush and long grass; past one deserted kraal and following river banks. Clear, open, deep channel to midday halt. High range receding on left bank	12	
" 22	"	4	To small kraal of "knob-nutzen" at three hours, and at four hours cross small stream and encamp on river	18	
" 23	"	7	Down right bank. Forest land, flats, and low undulating hills, a deserted country, game abundant. To halt on river which runs in a deep channel directly below the left bank, and rather below our camp this channel veers across to right bank again		
Carried forward				79	

LIMPOPO TO AFFLUENCE OF LIPALULE RIVER—continued.

Date.	Mode of Travelling.	Number of Hours.	REMARKS.	Estimated Distance in Miles.	Estimated direct Distance in Geographical Miles.
1870. Aug. 24	On foot	5	Brought forward At half hour rapid bend and channel continues to follow right bank. Thick thorn and prickly pear bush covering low hills, varied with forest land; game abundant, and halted half a day to shoot meat	79	
.. 25	..	7½	Hills on either side have faded away, but the banks of the river are well raised above the water level. At five hours had to shoot an ox. Passed a kraal at six and a half hours, and halted at another kraal for the night	12	
.. 26	..	7	Through forest land. High undulating ground, with large trees on either bank. Game abundant. Very dense bush from five to seven hours. Passed one deserted kraal, and halted in river bed	18	
.. 27	..	6	Forest and open grass plains and sloping hills, to halt on a nullah at four hours. Halted on a "sea-cow pool" communicating with river (salt)	18	
.. 28	..	4½	Cross small river, muddy banks, and take a path parallel to the Bembe, then cross rising ground, thickly wooded, to forest on marshes	15	
.. 28	..	1½	Cross the marshes, which are traversed by a stream running into the Limpopo and follow rising ground to a kraal ..	20	40
.. 28	..	2	Descend into fine open grasslands, large trees and beautiful landscape to camp on river. Channel always broad and deep		
.. 29	..	4	Fine country, thickly peopled, and highly cultivated. To "the meeting of the waters" of the Lipalule (or Oliphant's River) and the Limpopo (Bembe)—the point visited and named by Mr. St. Vincent Erskine		
				12	20
				186	110

V.—FROM THE LIMPOPO (AFFLUENCE OF LIPALULE) TO UNCOMOGAZI RIVER AND LORENÇO MARQUES.

NOTE.—Mr. ST. VINCENT ERSEKINE's observation for "The Meeting of the Waters," lat. 23° 34' S., long. 33° 46' E., was adopted.

Date.	Mode of Travelling.	Number of Hours.	REMARKS.	Estimated Distance in Miles.	Estimated direct Distance in Geographical Miles.
1870. Aug. 29	On foot	3	Up the Lipalule River to the kraal of Iligungunyan; fine river, deep and clear water; well wooded; numerous kraals	10	
" 30	"	9	Crossed by Iligungunyan's Ferry, and struck through a sea of bush; halt at pool in bush; elephants and buffalo ..	27	
" 31	"	10	Commenced the day on a westerly course to pick up the path from Madumelan's; passed Ritobi's Kraal and to Cunyana.	33	
Sept. 1	"	10	Struck a small river, the 'Nwetzi, and followed its left bank; halted at night, after dark, beyond Qualikoti's villages, still on left bank	32	
" 2	"	10	To the kraals of Umgwenia, crossing the river 'Nwetzi three times. The natives state the 'Nwetzi to be an affluent of the Lagoa River, "the river which reaches the sea between the Uncomogazi and Inhampura" (Limpopo) ..	32	
" 3	"	10	To Magud's Kraals and Lakes, two miles from the Uncomogazi, or King George's River	30	130
" 4	"	4	Crossed the ferry over the Uncomogazi, a magnificent and navigable river, and through forest land and bush, past lakes, to halt at spring;	8	
" 5	"	9	Undulating park-like country, varied with sandy soil and scanty trees; cross Itobé River and Marsh at four hours, and halted on edge of Quanyambé (river?) marshes, beyond the extensive kraals of Quasilinda	21	
" 6	"	9	A long detour to take oxen round pool at head of Quanyambé marshes; six hours to Quonquondyan's Kraal on river flowing from the Lintombo range; cross river and halt at one of Nondwan's kraals	21	
" 7	"	12	Down Quonquondyan's River, and cross two other small rivers, then follow the right bank of the Uncomogazi along high ground past the kraal of Marn-gouin, and to halt at 9 P.M. outside a small village	32	
" 8	"	3½	Over one range of low hills to heights above Delugoa Bay, and descend to town of Lorenzo Marques (Guavuma)	11	35
				260	165

APPENDIX B.

RÉSUMÉ OF ACTUAL WORK AND DISTANCES.

THE actual work done consisted of 52 marching days, 35½ days being occupied in the journey from the Limpopo (affluence of Shasha) to Lorenzo Marques. 16½ days were occupied in the journey from the Tati settlement to the Limpopo *via* the Tuli River, but observe that this circuitous route was adopted in order to get carriers from the Makalaka kraals. The natives call it five days' journey from the Tati settlement to the Shasha at the affluence of the Tuli.

The halts occupied 11½ days (inclusive of four days' halt for boat carriers), hence the journey from the Tati settlement to Lorenzo Marques, including halts, was accomplished in 63½ days.

From "the meeting of the waters" to the mouth of the Limpopo (Inhainpura) is 120 miles. At Madumelan's there are numerous canoes, and vessels have frequently crossed the bar and proceeded up the river for a considerable distance; however, great care will be necessary on first entering the river, for on two occasions slavers have been in, and on the last one, after making the Mindongues drunk, kidnapped a cargo of them. The tradition of this outrage is well remembered by the tribe, and it will be indispensable to reassure their chief, Inhaintunibu, as to the intentions of the English. The mouth of the river being navigable, and the reach from the Nuanetzi to the Lipalule being certainly practicable for light draught of water steamers, I have no doubt whatever that below the Lipalule an abundance of water will be found. Madumelan visits the kraals on the river in canoes carrying a number of men.

	MILES, actual distance travelled over.	(GROSS) MILES, direct distance.
I. From the Tati River to Limpopo (affluence of Shasha River)	258½	175
II. Limpopo from affluence of Shasha to 'Mzinyani River and Tolo-Azime	85	60
III. Limpopo from Falls of Tolo-Azime to the affluence of Nuanetzi	187	119
IV. Limpopo from affluence of Nuanetzi to affluence of Lipalule	174	110
V. From the Limpopo (affluence of Lipalule) to Uncomogazi River and the town of Lorenzo Marques	260	165
	<hr/> 964½	<hr/> 629

I will undertake, with six months' preparation, to run steamers and flats to the Nuanetzi (or Livubu) in fifteen days, and connect with a wagon road (or with camels) *via* Zoutpansberg to the Tati, a journey which should be made easily in fifteen more. That is thirty days in all. A road already exists from Schoemansdal to the kraals of Makuleka, and has frequently been travelled by wagons.

The unhealthiness of the Limpopo and coast has, I am sure, been greatly exaggerated. None of my party suffered from fever, and we were in very hard work all the time, had no tents, and never entered a kraal at night, but slept in the open air on the river bank, and that too without any waterproof sheets and with a single blanket apiece (all our bedding was lost in the boat).

APPENDIX C.

AT Lorenzo Marques I fortunately met with Dr. Wilson, the owner of the Schooner "J. S. Wainwright," who invited me to accompany him on a visit to the Portuguese Ports on the Mozambique coast, an interesting voyage which was unhappily ended by our losing the vessel, near Inhambane, on our return.

I will briefly recapitulate the practical geographical results of this journey.

From Inhambane an excursion was made into the interior, proving that the seven rivers emptying into Inhalinga Bay were unnavigable and unserviceable.

Inhambane River itself is simply a large tidal inlet or estuary.

The Luize, Xavora, or Inhangu River, which passes within two days easy journey to the s.w. of Inhambane town, is a considerable river, but its mouth is obstructed by very heavy breakers and an impracticable bar.

A passage for ships exists between the mainland at Cape San Sebastian and the Islands of Bazaruto. A vessel can pass in by Cape Bazaruto, sail down this magnificent land-locked harbour, and go out to the Southward and Westward, *via* Cape San Sebastian.

The 'Usabia is shallow and choked up with islands and sand shoals from "Matika" (wrongly marked by Petermann as "Maringa") and is of no navigable utility.

The Gorongosa is laid down by Petermann with a considerable course—this is a mistake. It is a tidal river or estuary (as the Inhambane River), and, although broad, of no great extent into the interior.

The "Dopa" is not a mountainous chain, but only a long ridge of small and insignificant hills.

Pearl Island on the Kongoui (Zambesi) has entirely disappeared—washed away by the heavy floods.

It was established that the Macusi River is a branch of the Quillimane River—thus, if the Quillimane, from its connection with the Zambesi *via* the Mutl canal, be taken as a river of the great Zambesi Delta, such Delta is again extended by a distance of 23 miles further to the s.e. The bar and entrance of the Macusi was carefully surveyed, and the "Wainwright" (80 tons) taken over and up the river. The channel is good and infinitely more practicable than that of the Quillimane River (a copy of the last survey of which—an excellent one—was procured).

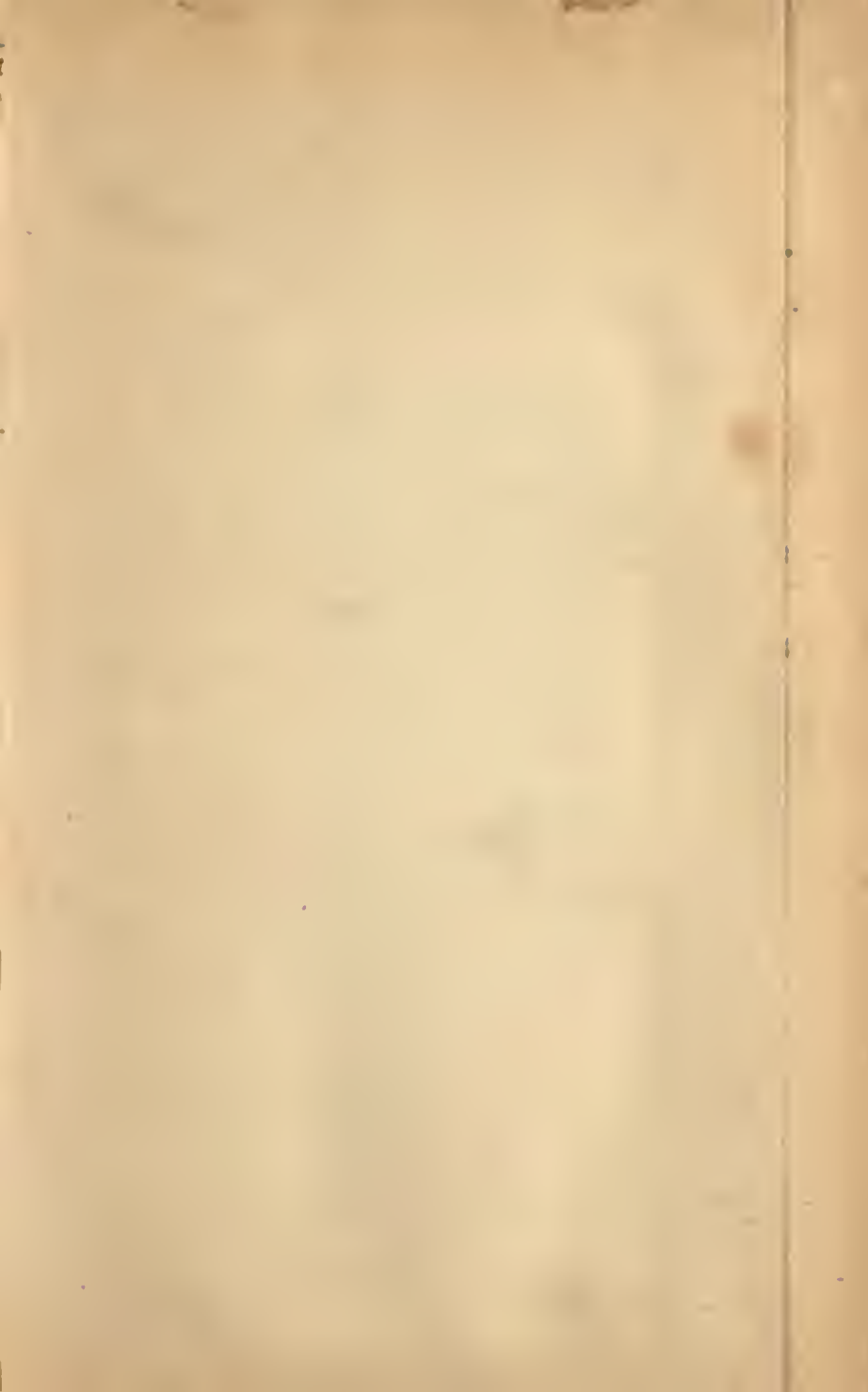
The lagoons of Muigá, connecting with the Licungo River, were also visited and laid down, 55 miles to the Northward and Eastward of Quillimane.

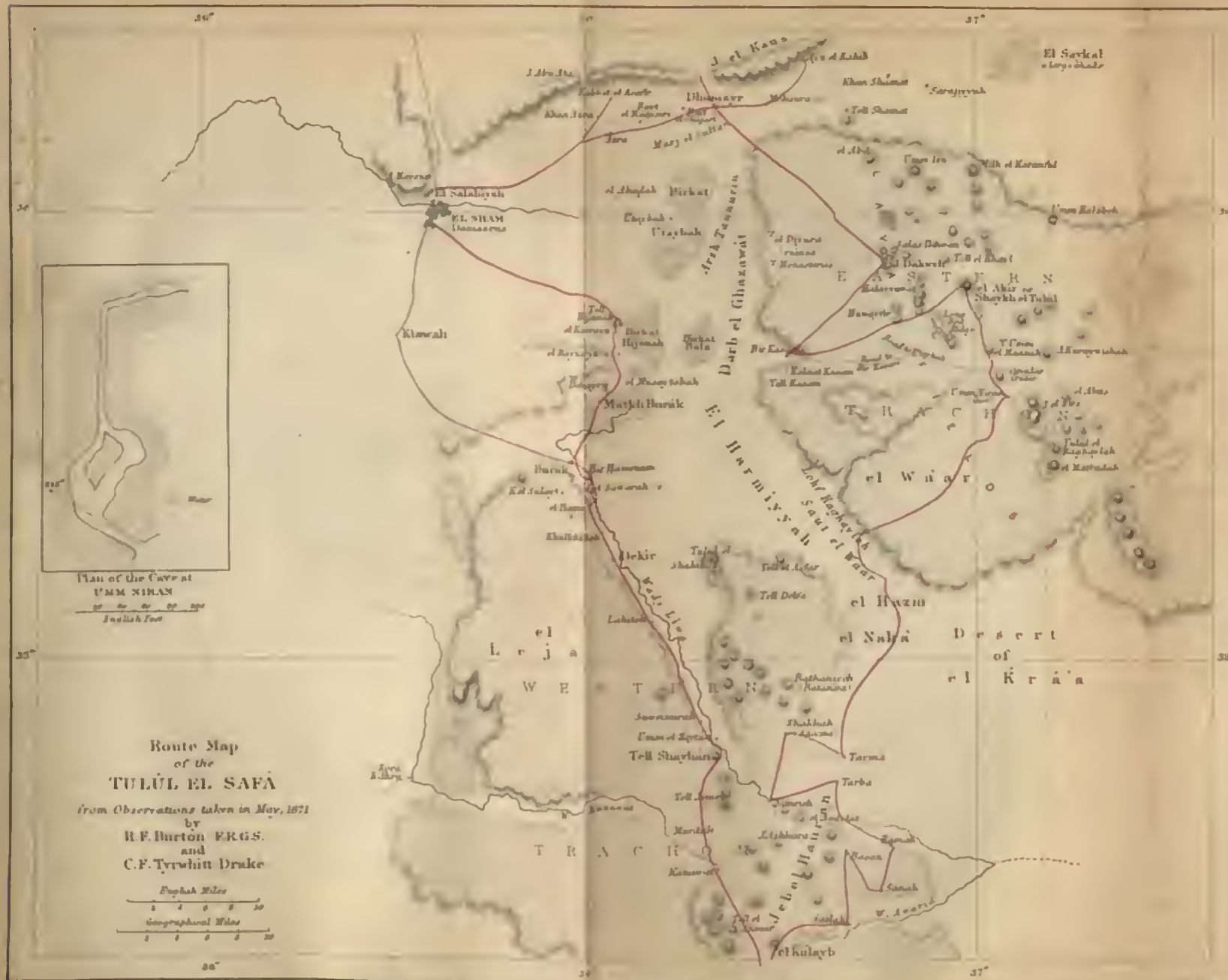
It was a disappointment to us to hear no news of Dr. Livingstone at Mozambique, for a rumour was spread at Quillimane that the great traveller had arrived in safety at Aden; unfortunately this proved to be entirely without foundation.

After experiencing very heavy weather off Quillimane and the Luabo, and during the return voyage down the coast, the "Wainwright" sprang a serious leak during the night of the 29th, and on the morning of the 30th we were compelled to take to the boats and desert her. Fortunately the weather was fair and after 12 hours' row we reached Inhambane in safety, meeting with heavy rollers on the bar, but with very little surf.

This delayed us for a month and we were obliged to continue our voyage in the "Roe," a small schooner of less than 20 tons. In her we were driven back to Bazaruto by the southerly monsoon, and nearly wrecked upon Cape Bazaruto spit for the second time!

Her owner, Mr. Ablett, stood in to the mouth of the Limpopo, in order to give me an opportunity of sketching the entrance, &c., and it was our intention to have gone over the bar, which does not appear difficult, but both winds





and tides were contrary, and our ground tackle was not to be trusted—one anchor having been already lost and a light kedje only remaining.

From Senhor Neves (the representative of the Maison Favre of Marseilles at Lorenzo Marques), who has travelled on the Limpopo between the Lilalule and the sea, most satisfactory evidence was collected with regard to the river. This gentleman reports it as broad and deep—"large enough for a frigate" when you once cross the bar—and describes the land as most fertile and capable of producing magnificent cotton crops. This, too, is the report of a practical cotton-planter, and his statements regarding the wonderful luxuriance of the wild plant fully bear out my own observations and remarks.

II.—*Notes on an Exploration of the Tulúl el Safá, the Volcanic Region east of Damascus, and the Umm Nírán Cave.* By Captain R. F. BURTON, Medallist R.G.S.

Read, Nov. 27, 1871.

DURING upwards of a year and a half's sojourn at Damascus I had been tantalised by the sight of the forbidden Tulúl el Safá, the Tells or hillocks of the Safá region, the Oriental Trachon (*Τράχων*, i.e. "rough region") of the Greek geographers. These pyramids, hardly bigger than baby finger-tips, dot the eastern horizon within easy sight, and prolong northwards the lumpy blue line of the Jebel Durúz Haurán, which appears to reflect the opposite wall of the Anti-Libanus. Many also were the vague and marvellous reports which had reached my ears concerning a cistern, tank, or cave, called by the few who know it "Umm Nírán," the Mother of Fires—that is to say, the "burning," probably from its torrid site, the great basaltic region of the Eastern Durúz line. It is alluded to in 1860 by Dr. J. G. Wetstein, formerly Prussian Consul for Damascus (note 1, p. 38, 'Reisebericht über Hauran und die Trachonen,' Berlin, Reimer, 1860), an official whose travels and whose writings, not to mention his acquirements as an Orientalist, have perpetuated his name in Syria. After a journey through the Safá and the Hauran Mountains, peculiarly rich in results, he was prevented by the imminence of the Damascus massacre of 1860, from exploring Umm Nírán. The cave also escaped, in 1867, Mr. Cyril Graham, whose adventurous march is too little known,—a collection of his papers, scattered throughout various periodicals, and published in a handy form like the 'Reisebericht,' would be a valuable addition to modern travel-tale in Syria.

The danger and difficulty of visiting these places arose simply from certain petty tribes of Bedawin; they are liege descendants of the refractory robbers of the Trachonitis, who, to revenge the death of their captain, Naub or Naubus (El Nukaryb, dimin-

tive of El Nakîb?), rose up against the garrison of 3000 Idumæans, stationed in their country by Herod, son of Antipater. They number nine clans, and they are known by the generic term Urbân el Jebel, Arabs of the Mountains, because they dwell in the highlands of the Haurân, under the patronage of the Druzes. The worst are the Ghiyâs and Shitâyû, who, although they have given hostages, were allowed, during my stay at Damascus, to ride the country within three hours of the walls, to plunder the villages, and generally to make paying work for the tribunals. They never hesitate to attack a stranger who enters their lands without the guidance of a fellow-tribesman. Hence the three broken-down Ghassanian convents called El Diyûrâ (the Days) have never, to my knowledge, been visited by a European traveller. I was fortunate enough to reach them in December, 1869 and 1870; on the latter occasion, however, the Ghiyâs Bedawin formed a line of some 40 skirmishers, and, advancing steadily as if on parade, treated us to a shower of bullets, severely wounding my gallant companion, Bedr Bey, son of the deceased Kurdish chief, Bedr Khan Pasha.

I found nothing remarkable in the Diyûrâ, except their excellent state of preservation where man has left them uninjured. Their site is the Lohf,* the Hebrew Chabal, the raised and rope-like edge of the lava-torrents poured out by the volcanic Tulûl. This lip forms a true coast to the alluvial ground, over which runs the Darb el Ghazawât, or Robbers' Road; westward are the Damascus Lakes, more properly called swamps, the "Fanges" of Spa, a salt clay-flat in the dry season and a draining-ground for the Barada and the 'Awaj when they have any water which the irrigated fields can spare. I often visited, at all seasons, these features which appear upon the heaps neatly contoured and sky-blue like the Lake of Lucerne: but I never saw a drop of surface-water in any one of the four different beds. The architecture of the three convents, like that of the Hauran Mountain and Valley-plain, and that of the 'Ulah, or upland, north-east of Hamah, is old Christian, dating from the days when the Benû Ghassân (Gassanides) of Yemen ruled the Damascene. The material is basalt, generally porous; the stones are for the most part rudely trimmed, and the shape of the buildings is parallelogramic. The cœnobites who owned the religious houses doubtless converted into smiling fields the now desolate clay-flats which separate the swamp-beds from the true coast. In the present day the ruins might be utilized

* Murray's Handbook (p. 471) translates El Lohf the "coverings;" it is certainly not "a narrow strip of the plain extending round the Lijah."

as guard-houses and depôts for irregular cavalry ; and the latter, when happier times come to the province, will patrol along this line between the villages El Hijâneh and Dhumayr, so as to bar the Bedawin bandits from their occupation of driving the fertile Merj or Ager Damascenus.

On Wednesday, May 24, 1871, we—that is to say, Mr. Charles F. Tyrwhitt Drake and I—left Damascus, intending to commence a tour through the Hauran Mountain (Jebel Durûz Haurin) by an exploration of the Tulûl el Safâ. Little need be said concerning our first eight days of travelling over a well-worn line, except that we found the mountain, like Syria and Palestine generally, explored as to the surface in certain well-worn lines, and elsewhere absolutely unknown. My friend's map of the tour will be a considerable addition to our scanty geographical knowledge of the Trachonitis. Its correctness will be vouched for by the fact that his unbroken series of compass-bearings through the Tih and the rest of the Sinaitic Peninsula, which “covered 600 miles of country, shows an almost inappreciable error on subsequently joining a place the latitude of which has been ascertained” (p. 7, ‘The Desert of the Tih and the Country of Moab,’ by G. H. Palmer, ‘Palestine Exploration Fund Quarterly Statement,’ New Series, No. 1, Jan. 1871 ; London, Bentley).

We sketched during that week some 120 inscriptions, including three in the Palmyran dialect. We also dug under the tower of Bassos at Shakkah, the Saccæa of Ptolemy, and we found that here, as at Palmyra, the dead were mummified. Three long inscriptions in Greek hexameters and pentameters, give all possible information about Bassos, and the date of his death is generally placed in A.D. 176. On Friday, May 26, we ascended the quaintly-fashioned tumulus of clay, or rather indurated mud, sprinkled over with scoræ, which the people call Tell Shayhân, from the holy man whose tomb crowns the summit. The importance of this feature has been greatly under-estimated in all our maps. A view from the south-west, where it appears a huge legless arm-chair, at once shows that the Leja or Refuge, the Argob of the Hebrews and the Western Trachon of the Greeks and Romans, is mostly the gift of the Tell Shayhân. It is, in fact, a lava-bed, a stone torrent poured out by this volcano over the ruddy-yellow clay and the limestone floor of the Hauran Valley, whilst in later ages the surface has been modified by the action of the elements. Dr. Wetzstein rightly defines the limits of the pyriform “Mal Paiz,” placing “Brâk” town (Burâk or the Cisterns) on the north at the stalk of the pear, Umm el Zaytûn on the east, Zorâ (Dar’ah) at the westernmost edge, and Rîmat el Lohf to the south. But ho

feeds the Leja with a "grosser lavastrom," proceeding in an artificially straight line from Jebel Kulayb, and flowing from south-east to north-west. We ascertained, by careful inspection, that this feature does not exist. At Kanawát, the ancient Kenath and Canatha, Mr. C. F. Tyrwhitt Drake secured the fine altar-head of basalt now lying in the rooms of the Anthropological Institute. At the noble ruins of Si'a (سيع) were found two Palmyran inscriptions, showing that the Palmyrene of Ptolemy extended to the south-west, far beyond the limits assigned to it by the moderns. We then ascended the Kulayb for the purpose of mapping the tops of many craters which appeared to be scattered in confusion. Viewed from the heights of the Libanus, the Anti-Libanus, and the Hanran, this mountain appears like a dwarf pyramid, studding the crest of a lumpy blue wall, and it is popularly supposed to be the apex of the range which paleographers have identified with the Ptolemeian "Alsadamus Mons."* The name is erroneously written Kulayb (كليب), meaning "little dog," and is mispronounced Kulayyib. The orthography is Kulayb (قليب), "little heart," or "turning-point," and the latter is doubtless the correct sense, as the central ridge of the Jebel Haurán here drops southwards into an upland valley. On a nearer view, El Kulayb has one peculiarity: where all the cones are barren heaps of red and yellow matter, it is feathered with trees up to the summit. A little south of the apex we found a diminutive crater opening southwards. The aneroid showed 418° lower than the summit of the Cedar Block, the greatest altitude in Syria and Palestine; the B.P. 205·50° (temp. 75°), and the hygrometer supplied by Mr. Casella stood at 0°.

The summit of El Kulayb gave us two valuable observations. The apparently confused scatter of volcanic and cratered hill and hillock fell into an organized trend of 356° to 176°, or nearly north and south. The same phenomenon was afterwards noticed in the Safá Region, and in its outliers, the Tulúl el Safá, which lie hard upon a meridian. Thus the third or easternmost great range separating the Mediterranean from the Euphrates Desert, does not run parallel with its neighbours the Anti-Libanus and the Libanus, which are disposed north-east and south-west.

The second point of importance is that the "Turning-point Mountain" is not the apex of the Jebel Durúz Haurán. To the

* See, however, Dr. Wetzstein (p. 90). I avoid making extracts from his excellent 'Reisebericht,' as my leisure moments have been employed in translating and annotating it.

east appeared a broken range whose several heights, beginning from the north, were :—

1. Tell Ijânah bearing 38° , and so called from its village. Though not found in Dr. Wetzstein's map, it is rendered remarkable by a heap of ruins, looking from afar like a cairn, and it is backed by the Umm Haurân hill bearing 94° .

2. The Tell, rock and fountain of Akriba * (Dr. Wetzstein's Akraha), bearing $112^{\circ} 30'$.

3. Tell Rubâh, bearing 119° ; and

4. Tell Jafneh, a table-mountain with a cairn at the end, bearing $127^{\circ} 30'$.

During the course of the day we passed between Nos. 1 and 4, and we assured ourselves that our observation with a pocket goniometer and spirit-level, taken from the summit of El Knlayb, was not far wrong in assigning 300 feet of greater altitude to Tell Ijânah. But though the "Turning-point Mountain" is not the apex of the Hanran highlands, it conceals the greater elevation from those standing either upon the crest of the Hermon, or in any part of the Aurantitis Valley.

A visit to the eastern settlements facing the Euphrates Desert convinced us that the Jebel Durûz Haurân has greatly changed since it was described by travellers and tourists. Until the last 150 years it was wholly in the hands of the Bedawin; at that time it began to be occupied by the Druzes, whom poverty and oppression drove from their original seats in the Wady Taym and upon the slopes of the Libanus and the Hermon. During the last five years not less than seventeen villages have been repeopled, and in the autumn of 1866 some 700 or 800 families fled to this "safe retreat." We can hardly wonder at the exodus, when we are told that nearly half the villages of the Jaydûr district, the ancient Ituræa, eleven out of twenty-four, have been within twelve months ruined by the usurer and the tax-gatherer. It is hardly necessary to dwell upon the short-sighted policy which drives an industrious peasantry from its hearths and homes to distant settlements, where defence is much more easy than offence; and where, as Cromwell said of Pease Burn, "ten men to hinder are better than a hundred to make their way."

On the evening of Wednesday (May 31st) we reached Shakkah, the ancient Saccæa, still showing extensive ruins and sundry fine specimens of Hanranic architecture, especially the house of Shaykh Hasan 'Brahim, with its coped windows and its sunken

* In Syria and Palestine there are many Akribas, two villages of that name lying within a few hours of Damascus. The most celebrated of all is that built 6 miles south-east of Nablus, identified with Ekrebel (Jud. vii. 18), and afterwards capital of the Acrabattene district.

court. Here we were received by the Druze chief, Kabalân el Kala'âni. This person had met us at Kanawât, and had promised an escort to Umm Nirân. He now warned us that his people were on bad terms with the Ghiyâs Bedawin, who were in their summer quarters, the Rulibah Valley, distant only about 15 geographical miles from the cave. Presently we found out that his only object was to urge an exorbitant demand for some ten horsemen—a smaller number would fear to travel. We at once determined to make our *point de départ* the little village of Tnymâ, lying about 8 miles to the south-east. It was out of our way, but the Shaiykh Yusuf Sharaf had shown himself our friend. In justice to the Druzes, I must remark that Kabalân el Kala'âni was the sole base exception to the hospitality of his race, and to the national affection with which they regard their old friends and allies the English. And as a proof that his conduct was generally reprobated, six youths, the sons of Shayks, or chiefs, at once volunteered to escort us, and refused all remuneration.

Despite the stiff sirocco, which blurred the outlines of the distant highlands, before beautifully crisp and clear, we left Tnymâ at 1.50 P.M., on Friday, June 2nd. The bridle-path led past sundry small villages of Druzes to the well-defined Wady Jahjâh (جحجح), which after rain discharges eastward into the basaltic outcrop, known as El Harrah, the "hot" or "burnt land." One hour's ride over rough but not difficult ground placed us at the K'râ'a (القراع), which is simply a lava-torrent, showing volcanic dykes, secondary craters, and blow-holes, with barrows arbitrarily disposed at all angles. The two normal forms, the long barrow and the round barrow, are sketched by Dr. Wetzstein (p. 13). He considers them to be big bubbles, whose reticulated surface is almost invariably blown off at the top, or split along the ridge, by the bursting of the gases which elevated them. In some cases, however, the narrowness and sharpness of the gashes at the summits, and of the clefts which divide the lengths, seem to argue that the mere contraction of the cooling mass is sufficient to part and split it; moreover, not a few have cross cracks as well as longitudinal fissures.

Evidently the basaltic formation of the Trachons is of younger date than that of the Hermon. An active volcano presupposes the neighbourhood of the sea or of some large lake.* This out-

* A curious correspondence upon this subject took place in the 'Field' newspaper of Dec. 16th and 23rd, 1871. The reporter of the meeting could not understand "why geographers were so slow and timid in reminding him (Captain Burton) that he had advanced nothing new" concerning the proximity of volcanoes to sheets of water. The text will show that I did not "claim any originality of idea with regard to the fact"—I have simply assumed that it is generally known.

break probably belongs to the days when the Eastern Desert—a flat stoneless tract extending from the Trachonitis to the Euphrates—was a mighty inlet of the Indian Ocean. The northern limit of this extinct Mediterranean may be found in the range of limestones and sandstones, the furthest outliers of the Anti-Libanus, upon whose southern and eastern part Palmyra is built, and which runs *viâ* Suklneh eastward to the actual valley of the Great River. At the river known as Kasr el Huyr (الحير), in the Jayrud-Palmyra Valley, I found the stone composed mainly of scallops or pectenes so loosely agglutinated that the fingers could pick them out.

We crossed the K'râ'a in 55 minutes, and entered the Naka' (النقح), rolling ground of loose ruddy-yellow soil, the detritus of basalt which, during wet weather, balls the feet so as to prevent walking, and in which, during the dry season, horses sink up to the fetlock. This is the staple material of the Hauran. Our passage of the Naka' occupied two hours. We then ascended a hill-brow, which in Spain would be termed a "Loma," and fell into El Hazm: the only difference in the aspect of the land was a trifle more of stone, whilst the basalt was either lamp-black or snow-white with the usual cryptogam. These people borrow from the Bedawin a name for every modification of terrain, however trifling. The lands to the north—a mixture of clayey soil and stone—are called El Hârimiyah; the stony ground to the east is the Wa'ir, the usual generic term; and still on our right ran the rocky Wady el K'rân, which we had crossed and left southwards.

Here we had our first fair view of the Safî. The little volcanic block, with its seven main summits, is well laid down in outline by Dr. Wetzstein (p. 7), and to its south is an outlying scatter of cones and craters, which the Druze youths called Tulûl el Safî, a term naturally confined to the northern offsets at Damascus, where no others can be seen. A deeper blackness made the Safî stand conspicuously out of the Harrah: here the latter is a rolling waste of dark basalt, broken by and dotted with lines and veins of yellow clay, bone-dry at this season, and shimmering in the summer sun. These veins are generally known as "Ghadir," or hollows where water stagnates. The trend is north-east to the Ruhbah, a long waving streak of argillaceous formation. In the far distance, extending from east to south-east, and raised by refraction above the middle ground of flat basalt which lay beyond our rolling volcanic foreground, gleamed the sunlit horizon of the Euphrates Desert—that mysterious tract never yet crossed by European foot.

Here we began to appreciate the precautionary measures by

which the old Roman soldiery kept the Bedawin at bay. Far to the east, and in the heart of the Harrah, which is bisected by a military road, are shown their outstations, Khirbat el Bayza, El Odaysiyeh, and Nimára, which must have been impregnable to the wild man, and behind which lay the waterless waste investing the fertile regions of Syria.

As the shadows of night deepened around us and the clouds, which at times shed heat-drops, obscured the moon, though near its full, we could see nothing but the wild, black stone-region, now in front, then on either side, and we could distinguish only that we were following the course of a wady, which became so winding, that at times it ran south-east and even south instead of north-east. At last, after 2 h. 45 m. of this weary work, we called a halt, determined not to exhaust horses already thirsty. Our escort wasted water enough for a week: they were more utterly helpless than children would have been under similar circumstances, and at last, reckless of water or wood, all slept the sleep of the weary. Our day's work had been a total of 6 h. 40 m., which may be assumed as 17 indirect geographical miles.

The next march was peculiarly severe. We left our hard beds at 4 A.M., and a few yards of advance showed us the "Ghadír Abú Sarwál," the "Hollow of the Father of Breeches," where we had been promised water. This deep depression in a shallow wady underlies a heap of rock which forms the right bank, and the yellow surface of caked and curling silt proved to us that it had been bone-dry for the last six weeks. Here we again fell into the "Sultani," a main track which we had lost during the night; and, after half an hour, we struck El Nabash, a depression in the slope with the shapeless ruins of a settlement upon both banks. Then bending to the south-east, where a network of paths converged, we struck, at 6 A.M., the Ghadí el Ka'al (غدير القعل): thus expending a total 8 h. 40 m. upon a march which, all assured us, may be covered by laden camels in 6 h. to 6 h. 30 m. This basin is, according to our guides, the drainage point of the Wady el K'rá'a. At the season of our travel it appears to be a mere sink without watershed: trending east and west, it is about 90 yards long and some 4 feet deep: it does not outlast the year, and its highest water-mark is not more than 4 feet above the actual level when it would flood the eastern clay-plain.

We spent an enjoyable 50 minutes at the water, and then the watch showed 7.15 A.M. We retraced our steps, and fell into the Saut (السوط), or whip-thong. This is a line of drab-coloured clay, which subtends the western Lohf or ruins of the northern

Tulûl el Safâ. Fresh spoor of a dromedary appeared upon the older footprints: the rider was evidently bound, like ourselves, for the north-eastern regions, where the Bedawin dwelt, but not with the object of exploration, and we gave the ill-omened footprints all the significance which they deserved. Hard on our right rose the Lohf, a crested embankment of black and "mailed" basalt, somewhat resembling the old Saracenic revetments. It is evidently the bank formed by the lava-torrent when beginning to cool, and thus becoming able to resist, like a dyke, the pressure and thrust of heated matter in its rear. The height varied from 30 to 50 feet, and the dark line projected into the yellow dwarf capes, bluffs, and headlands separated by dwarf wadys. Small ruins and look-out places of the liveliest colour crown the coping, and in places where the outline droops it is crossed by paths practicable to horsemen. We ascended the summit, and found the shape a tolerably regular prism, disposed in sections at right angles like giant fortifications. Here the western side was lamp-black, and the eastern was white with the normal cryptogam; there the rule was reversed. In fact, we could only determine that the lichen least affects the southern frontings.

After 1 h. 50 m. up the Sant, which often became a scatter of stones apparently swept down from the Lohf, we turned sharp to the right, and crossed the lava-ridge, where it had a break; here it was subtended by several parallels which bore much the appearance of earthworks and cavaliers. Within was a grim and grizzly scene of volcanic ruin and devastation, a landscape spoiled and broken to pieces; here ghastly white, there gloomiest black, and both glowing under the gay sun of a Syrian June. The altitude was that of Damascus city, but the light sweet breath of the north ceased when we left the Ghadîr, and the shape, as well as the components of the "Wa'ar," or Trachon, admirably condensed the heat: the air danced and reeked, affecting man and beast with intolerable thirst. All was bare of Bedawin: at the Rajm el Shalshal, however, where we rested in a shady fissure, we again saw traces of our friend on the dromedary.

We were presently surprised, at 4.20 p.m., by seeing the advanced party spring suddenly from their horses, and by hearing the welcome words, "Umm Nîrân." The transit of the ugly monotonous "Wa'ar" had occupied 4 h. 25 m., and the day's journey a total of 8 h. 15 m. From Taymâ we had spent 17 hours, which result was a distance of 23½ direct geographical miles.

The feature, concerning which we had heard so many curious and contradictory tales, lies at the western foot of a fang-shaped,

scarped and round-topped block, which the Arabs called El Zirs (الزرس), from its likeness to a grinder-tooth. Occupying the eastern slope of a rounded hillock of basalt, the mysterious cave opens to the s.s.e. (133°), with a natural arch of trap which at first sight appears artificial, and it is fronted by a circular hollow of clay, to which rude steps lead from the stony eastern edge. There is another approach from the west, and both show that at times the water is extensively used. All above this cave is dry as the sand of Sind: after rain, however, there is evidently a drainage from the fronting basin into the cave.

A plan drawn by my friend and fellow-traveller will explain the form of Umm Nirán better than any words of mine. The floor, coated with shallow dry mud, is of ropy and other basalt, and the slope is easy and regular. The roof shows a longitudinal ribbing, as if the breadth had been nearly doubled. A sensible widening, with a lozenge-shaped pier, the rock being left to act as column, succeeds the low and narrow adit through which a man must creep. Passing from this bulge to a second shaft, after a total of 200 yards we reach the water, a ditch-like channel, averaging 4 feet in breadth, with Mastababs, or flat benches of cut rock, on either side, varying from 2 to 6 feet wide. The line then bent at an angle of 50° to the s.s.e. Here, by plunging his head below the water, and by raising it beyond where the roof-spine descended, my companion found an oval-shaped chamber, still traversed by the water. He could not, however reach the end; a little beyond this point the arch-ceiling and the water met. The supply was perfectly sweet, and the thermometer showed 71° to 72° Fahr., the air being 74° Fahr.: the atmosphere was close and dank, and the basalt roof was dripping. The water varied in depth from a few inches to mid-thigh, and the taped length was 140 feet. Thus the total length of the tunnel was 340 feet; but it may be greater. According to the Arabs, it is supplied by springs as well as by rain, and the hottest season fails to dry it.

This curious reservoir is evidently natural, but it has been enlarged and disposed by man. There is no local legend concerning the origin of a work so far beyond the powers of the Bedawin past and present: we could only conjecture that it was made by some of the olden kings of the Damascene, who enlarged the approach for the benefit of their flocks and herds entrusted to Arab care-takers. The guides knew nought of ruins or of "written stones" in the neighbourhood, and we could see only the rudest of dry walls used to shelter the shepherds from wind and rain.

We are now at the southern limit of the northern Tulúl el

Safâ, a projection from the Safâ Proper, the eastern *Τράχων* of the Classics, which apparently has been so puzzling to modern translators. Strabo (lib. xvi. cap. 2, para. 20, Hamilton and Falconer; London, Bohn, 1857) says "*Above* (read 'beyond') *Damascus are the two hills called Trachones* (read 'the so-called Trachones, namely the twin Wa'ars of the Lejá and the Safâ'); *those towards the parts* (i.e. south and south-east) *of Damascus, occupied by Arabians and Idumeans promiscuously, are mountains of difficult access, in which are caves extending to a great depth. One of these caves* (Umm Nirín?) *is capable of containing 4000 thieves.*" Pliny (vol. i. chap. 16, Bostock and Riley; Bohn, 1858) reckons Trachonitis amongst the Tetrarchies. The 'Revolt of the Trachonitis' is the subject of an Essay by Josephus ('Antiquities of the Jews,' book xvi. chap. 9). Ptolemy (chap. xv. Table iv.) mentions amongst Syrian mountains the Alsadamus, whose centre would be in E. long. 71°, and in N. lat. 33°, and the "Bathanrea Provincie (Bataniyyah or Bashan) à cuius orientali parte est Saccaea (Shakkah). Et hujus sub Alsadamum Montem sunt Trachonitæ Arabes." Popular works (e.g. Smith's 'Classical Dictionary,' *sub voce*) of course repeat that Trachonitis was "for the most part a sandy desert intersected by two ranges of rocky mountains called Trachones." Similarly in the 'Concise Dictionary of the Bible,' Trachonitis is represented to have included "the whole of the modern province (!) called El-Lejah, with a section of the plain (?) southward, and also a part of the western (and eastern) declivity of Jebel (Durúz) Haurân. This may explain Strabo's two Trachones." Our fortnight's excursion will, it is hoped, introduce a correct topography for future writers. The fact is that the Safâ or Eastern Trachon, together with the western, that is to say the Leja Proper, would be included in the Tetrarchy of Trachonitis, which thus extended from Auranitis or the Hauran Valley to the Desert of the Euphrates.

The shape of the Tulûl el Safâ region is pyriform, like the Leja; the lone El Mufradah forms the stalk; the bluff end to the north is the Tell Shúmnât together with its dependencies, whilst to the north-west the boundary is the Arz el Jabásh-shiyyah, looking like the dry bed of a torrent, brown and rust-stained. We did not lay down the eastern limit, but the villagers of Dhumayr pointed out certain Istirât or unnamed cones depending upon the Umm Rakibeh. This frontier may perhaps be extended to the Jebel Says bordering upon the Hamâl Region.

We set out at 5 A.M. in a cool west wind, making north for the great red cinder-heap known as Umm el Ma'azah (Mother of the She-goat). After 1 h. 35 m., in which we covered

perhaps $4\frac{1}{2}$ direct geographical miles, we halted for observations at the foot of the cone, and then we fell into the trodden way which winds round to its west. After 20 m. of slow march, we directed the camel-men to make straight for the Bir Kasam, whilst we ascended the Tell 'Akir, by the Bedawin pronounced El 'Ajir. Usually known as the Shaykh el Tulûl, this "Head-man of the Hillocks" rises some 7 statute miles from the Umm el Ma'azah. We then rode up in 1 h. 20 m. to the foot of the cone, which springs from a high plane, and whose large outliers trend to the south with a little westing. Some minutes were spent in stiff climbing up the ridgy surface of thoroughly burnt scorïæ. The angle of the north-western slope was $19^{\circ} 30'$, that of the north-eastern 22° ; the southern ramp up which we walked showed $22^{\circ} 30'$, and the stoniest part above the lateral folds reached 24° . We then ascended the eastern or highest point, for a better prospect of the peculiar scene before us. Viewed from this elevation the volcanic Tells and craters, modern tertiary and pleiocene, which before seemed scattered in wild confusion, fell into three regular lines, disposed nearly north and south. The middle range is represented by the Umm Izn (Mother of an Ear), so called because the table-top has a projection at one end, a kind of "cock-nose," breaking the straight line of features. About the centre of the line stands the "Monarch of the Mounts," and to the south project the Zirs and the Raghayleh Blocks. The plain is silt upon a limestone floor, explaining how from afar a yellow sheet appears spread to the very basis of the cones and pyramids. The latter rise from this sterile investment in naked heaps, black and white, red and yellow; they are table-topped and saddle-backed, as well as conical, whilst inky dots show the smaller fumaroles and sable bars and lines the connecting ridges of basalt. All the Tells, especially those to the north-west, project immensely long black tails to the east. The zebra-like stripes of black and white are the effect of the regularly blowing west wind, which disposes the fine and comminuted dust of the shells produced about the Swamps, in thin sheets over the western slopes of the cones, whilst the latter shelter the basalt ground to their lee or east.

After inspecting the 'Akir, we had a truly wearying and monotonous march over the hilly plains to the west. The Druzes, as usual, rode forwards, leaving us to follow with the camels, and every hour and a quarter of march obliged us to dismount, tiring us by want of exertion. At last, after 3 h. 30 m. of actual riding, we came upon the scorched, yellow-white flat of the Kala'at and Ayn Kasam (the Fort and Hill of an Oath), concerning which I cannot discover a trace of Arab tradition.

We reached the fort in 30 m., and thus ended our total of 7 h. 48 m., the work of that day. We had great trouble in finding the well which maps place to the south-east of the Kala'at. It really bears 10° and $9^{\circ} 30'$ from the Tell Kasam.

The next day (Monday, June 5) was the last of our desert excursion. The Druzes quietly left us during the night, under the escort of one of their number, Mahommed Kazamani, who, though badly wounded in a late fray, followed us to Damascus and received a five-shot revolver as a reward. But instead of making for Dhumayr *via* the Derb el Ghazawát, or Road of Razzias, fortunately for us we determined, despite the unusually hot and still weather, to inspect the Dakweh Mountain, upon which so many of our fellow-countrymen have cast longing looks from the minarets of Damascus. The view from the summit enabled us to correct the position of the Salás Ikhwán, or Threo Brothers. As will be seen, they adjoin the Dakweh, whereas our maps place them upon a parallel instead of a meridional line, and give them the curiously corrupted name "Tulesawa." At 4.50 p.m. we reached the Dhumayr village, where we were received with effusion by the good Rashid El Bostaji. We had covered 20 indirect miles from Jebel Dakweh, and a day's total of 30.

III.—On the Neighbourhood of Bunder Marayah. By Captain S. B. MILES, F.R.G.S.

[Read January 8th, 1872.]

BUNDER MARAYAH, in lat. $11^{\circ} 43'$ N., the chief port of the Mijertheyn tribe of Somál, is situated at the foot of the range of hills bearing the same name, which rise about a mile behind the town to a height of 4000 feet. The town extends nearly half a mile along the beach, and contains upwards of two hundred houses, about a quarter of which are built of sun-dried bricks, and the remainder of matting. The permanent population of the town is only some six or seven hundred, but during the trading season, when the kafilas arrive from the interior with gums and other produce, and the Arab merchants come across from the opposite coast, this estimate must be quite doubled. The largest and most conspicuous building is the Sultan's, situated at the back of the town; it is of Hadramaut fashion, is several stories high, and was built forty years ago: there are several others also of the same style and almost as large. There are three mosques, all whitewashed, but in rather a dilapidated state; the town also boasts a school, attended by thirty

boys, who learn to read and write Arabic. The ranges of hills, of which Jebel Marayah forms part, correspond almost exactly in their formation and composition with those in some parts of the opposite coast of Arabia; they are both of the same cream-coloured limestone, with sandstone, shale, quartz, &c., and the strata of both have the same confused appearance. I noticed no metallic signs here. The low narrow maritime plain in which Marayah lies, extends eastward until it meets the spur forming Ras Feeluk; to the west of the town it gradually narrows until the sea washes the cliffs, thereby rendering the road to the next village, Wurba, difficult, and practicable only at low water. The soil of the plain is principally coral, with sand and fragments of rock washed down from the hills; it is well wooded with acacias, mimosa, &c., and Shora bushes, asclepias, and aloes abound. There is, of course, no cultivation, but quite recently a few date-trees have been planted near the town, and at the neighbouring village of Gurso a few plots of jowaree have been sown during the last three years as an experiment. Water is scarce, from the difficulty of excavating wells; the only well, named Eyl Teâze, is two miles from the town, and has to supply in addition both Gurso and Gesulli, which are destitute of sweet water: the supply from this well is good, but of astringent quality. To the east of the town, distant $2\frac{1}{2}$ miles, is the Wady Ilakër (the Rio de Santo Pedro of the Portuguese); the course of this wady is a very short one, but it is fed by many torrents, and in the floods must be a deep and powerful stream. It forms the natural pass into the interior, and I explored it for 20 miles, passing two watering-places. The opening where it makes its exit is called Kurmo, and is about 300 yards broad; it then bifurcates, one mouth entering the sea at Marayah and the other near Gurso, where it forms a "khor," or salt creek, half a mile long, but barred in the dry season by the sandy beach: in the floods it is used as a shelter by bungalows and small boats.

The chain of hills bordering the N. and N.E. coasts are described as extending three days' journey into the interior, when the country slopes down southwards and eastwards until it merges into an extensive hilly plain or plateau well wooded and grassy, and full of large game. No corn is raised, and but little eaten, the inhabitants being purely nomadic, subsisting on their flocks and herds, and moving about for the convenience of pasturage. The country is, I imagine, but thinly peopled, and the permanent villages few, the Mijjertheyn being amongst the poorest of the Somâl, and not possessing the countless flocks of sheep owned by the Gulbêdh tribes.

The commerce of this coast is considerable, and is carried on

with Moculla, Sheher, the Sowahil, Jiddah, and Bombay. The exports are frankincense, gum arabic, "mulij," indigo, and mats; for which cloth, dates, rice, jowaree and metals are imported in return. There are six large "buglas" belonging to these ports trading across the Indian Ocean to Bombay, besides several "sunbooks" that go to the opposite coast. The buglas rarely fill at one port, but coast along taking in cargo until full. The resources and productions of this country, especially vegetable, are much richer than might be expected from the exports, and only require to be developed for a valuable trade to spring up. Many useful gums, dyes, and oil-plants exist, of which no account whatever is taken by the natives; the latter substance, for instance, is never expressed by them—they have, indeed, no word for it, and the very use of it is unknown, ghee being the substitute. Indigo grows wild, and is sent to Moculla and Sheher, where there is a great demand for it. The mats are made almost exclusively of the "Ow" or leaf of the Doum (*Hyphæne*) and wild date-palms, the latter being preferred; they are dyed of two colours only, red and black; the red dye is a mixture of aloes, "foah," saltpetre, and camel's dung; but they are acquainted with several plants that produce a red dye. Mulij, or, as the Somâl call it, Gero—the fruit of the Doum palm—is a nut with a hard and thick rind; it is cut in half, dried, and strung for export. The kernel is perfectly insipid, and requires an immense deal of mastication: it has nothing to recommend it, but is much eaten by the Arabs as a restorative. *Asclepias*, senna and aloe plants grow abundantly, but their medicinal and fibrous uses are unknown to the natives. No ivory, feathers, or skins are brought to these ports, except by some chance party arriving from the Dulbanta country. The people possess but few cattle and still fewer horses. Animals and ghee are not exported now as formerly, all the ghee produced being consumed by themselves: even the coast people often have a difficulty in procuring it. The severe famine here in 1868 impoverished the country greatly, and the effects of it are still felt: it affected the neighbouring country of the Wursumgalli also, but not to the same extent. A large portion of the inhabitants are said to have died of starvation, and thousands of animals—camels, sheep, and horses. One man was pointed out to me who had lost 380 out of 400 head of camels; and many were the stories of large proprietors who had been utterly ruined. Honey is as abundant here as in Arabia, but no liquor is made from it as in Abyssinia. There are two species of bee producing it—the "Neis" bee, which makes its nest in holes in the rocks; and the "Riddin," which prefers deserted ant-hills: the honey of the latter is superior. The most valuable

products, however, of this country are its gums and resins. Gum arabic, tragacanth, myrrh, and many others, are produced in abundance; and in no other country, except sparsely on the opposite coast of Arabia, does the olibanum or frankincense tree exist. The Somāl divide gums into two classes—sweet and bitter; to the former belong gum arabic, mastie, “luban,” “mayeti,” &c., and to the latter myrrh, “hodthai,” and others. There are at least three species of acacia producing the Smugh or gum arabic, and they are all very abundant: the bark is cut thrice only by the natives for the gum to exude—if cut oftener the tree dies. I was told that the tree is cut only in this and the neighbouring province of Wursumgalli; in the west the gum is allowed to exude naturally, and the natives learn when to collect it from a small insect named “Jirgah,” which then begins to utter its note. The “hodthai” is a gum of peculiar quality; the tree is a thorny acacia, not unlike the babool, but has a smooth bark. No leaves were on it at the time of my visit, but the berries and leaf-buds were beginning to sprout from the thorns. The gum issues in a thick milky mass, or in small round lumps: when dry it becomes brittle. It is soluble in water, turning it quite milky. It is not exported, and the only use it is put to is, by men to whiten their shields, and by women to cleanse their hair. The tree producing the olibanum or frankincense, which is called by the Somāl “Beyu,” grows only on the limestone ranges of this and the opposite coast. The beautiful and singular appearance of this tree, with its tapering stem and crimped foliage, attached to the smooth surface of the marble rock by its large, white, bulbous mass, and dotting the tops of the hills, where often no other verdure is to be seen, has been so often described, that any further remarks are unnecessary. There are four different species of the tree, producing two distinct kinds of gum: the first and best kind, called Bedwi or Sheheri, comes from the Mohr Add, Mohr Madow, and Boido; the second kind, called Mayeti, is produced by the Yegaar. The Boido species is a taller tree than the others, and is so named from the gum running down in long tears. The Luban Bedwi is of three qualities, viz., Fussoos, Safee, and Munjmdal; the first is the best, but for the last few years so many trees have been destroyed in this part by the drought, that the little produced has been mixed with the second sort. The Mayeti is of one quality only, viz., Safai; it is very different in appearance from the Bedwi (which is in transparent drops), being of a milky-white colour and in large masses or flakes. The Mohr Add and Madow trees are generally found further inland than the Yegaar, and from this I suspect the gum derives its name of Bedwi, being obtained by the coast-dwellers and

merchants from the Bedouins of the interior. The Mayeti is exported chiefly to Jiddah and the Yemen ports; the Bedwi goes to Bombay for exportation to Europe. Numbers of the Somâl go across to Hadramaut for the purpose of gathering the frankincense, paying the Arab tribes there for the privilege, the latter never attempting to collect it themselves. The Somalies usually settle there, selling the gum at Moculla and Sheher, until they have amassed a competency. The Arab "Luban" is considered inferior to the African, which is termed "Asli" by the Arabs; probably the tree was imported into Arabia with the myrrh-tree in very remote times. The season for gathering the gum lasts for four months—from May to September; the trees may be gashed any number of times without injury, but unless rain falls soon after, the tree withers and dies. The gum is gathered fifteen days after the tree is cut, as it has then ceased to exude, and the bark, which heals rapidly, is again gashed. The knife with which the tree is cut is called "mingâf." The estate or plot of ground owned by each individual is called Hijjé, and is clearly defined and marked out, the trees in it being strictly respected by the other members of the tribe. The price of unsorted Luban paid to the Somâl by the Arab merchant was 2 lbs. of jowaree for 1 lb. of Bedwi, and $1\frac{1}{2}$ lb. of jowaree for 1 lb. of Mayeti. Besides the frankincense gum, the black and white Mohr trees yield a beautiful red dye, which is extracted from the thin papery bark. The Mayeti gum is as much used for chewing as it is for its sweet odour by the natives, and a blazing lump often serves for a light, instead of an oil-lamp. The trees, though growing wild, are carefully watched by the Somâl, and in some cases, I am told, they plant and propagate saplings in their fields; but this laudable custom, by which their wealth might be decupled, is too laborious to be universally followed.

The marriage ceremonies among these people differ considerably from those of the Arabs. The marriage portion paid to the girl's father is called "yerrud," and consists of from ten dollars to a hundred camels. It is not necessary to settle any richer dowry on the girl, and it is indeed seldom done. After betrothal the boy sometimes remains two or three years in his father-in-law's house for service, at the end of which he is sent back with presents often equal to or exceeding the "yerrud." Girls are sometimes carried off by force and married, and then, unless the parents are satisfied with a handsome present (which is usually done), war is sure to result. Boys, too, while tending flocks or cattle outside the village, are frequently carried off and held to ransom, in default of payment of which they are sometimes killed. In the horse countries, marriages of wealthy

people are celebrated with more ceremony and show, all the men of the tribe present turning out on horseback, and going through mock combats, &c. Here a little dancing and tomtoming, with a feast to the villagers, embrace all the festivities. As there are no Cazees, any Mulla can read the Khûtbâ. After a seven days' honeymoon the bride returns to her parents for a time. No ceremonies are observed on a birth: a girl comes into the world unnoticed, and the father is scarcely informed of it; if a boy, he generally gives a dinner. The wife is rarely of the same tribe as her husband, the Somâl being very averse to marriages among relatives, however distant the connection, and they are very Scotch-like in their recognition of kinship. Among the Mijjertheyn, the mother of any of the Sultan's children being of his tribe, or even of the "Darrood" division of Somâl, disqualifies them from the succession: the Sultan must be the son of a "Bhadir," i.e. woman of the "Dir" division of the Somâl. Marriage between consins—the rule with Arabs—is particularly abhorrent to them, but it has begun to obtain here of late in the Sultan's family and a few others, the example probably having been set by the Arab residents, or by Somalies returning from Arabia. The Somâl are particular about their honour and the reputation of their wives; widows are generally married by one of the husband's brothers or relations. It is customary for guests arriving from a journey to remain in the house during meals, and for conversation only, and not to sleep there or occupy the house as an inmate.

The Khûtbâ in the mosques is read for the Sultan of Turkey, as it is in Aden; the Somâl know not of the Khedive of Egypt, and imagine the Sultan to be the ruler of the universe, and all European and Asiatic nations his subjects. Like all Africans, they are very superstitious, respect omens, believe in geomancy, and have a great dread of the evil eye and of witches, "Komayu," who are said to work spells on a man until he wastes away and dies. When a man meets one of these ladies he covers up his face and mutters God's name or the "Lahoul," and endeavours to terrify her by threats. They have no reverence for trees, heavenly bodies, &c., nor any traces remaining, with one or two remarkable exceptions, that I could discover, of their old paganism. They are troubled with but few diseases, and have little need of medicine; they have a remedy for ulcers, and know how to heal spear-wounds quickly by applying the powdered bark of the Kûrrîâ, which is a powerful styptic. The wound of a poisoned arrow is invariably cut out, but the universal panacea is the actual cautery; a good dose (a few pounds) of ghee is also very efficacious in internal complaints. Small-pox commits its ravages

unchecked, inoculation being considered "harâm," any one undergoing it being doomed to eternal perdition.

The Mijertheyn are considered by the Gulbêdh tribes as superior to them in two things, viz., security of life and property, and strictness in religious duties, but are looked down upon for their poverty and meaner way of living. The Mijertheyn, however, are superior to all the rest of the Somâl in the attention paid to education, a much larger proportion being able to read and write than in any other tribe. They have, unfortunately, managed to earn an indifferent reputation, from the treacherous murder, on several occasions, of shipwrecked seamen, but there are at least as many instances of their kindness and hospitality to those thrown on their shores, and I am inclined to think their behaviour is due more to the wanton and reckless acts of a savage than to any bloodthirstiness or cruelty of disposition inherent in them. This tribe alone, I believe, of all the Somâl, does not smoke tobacco, considering it "harâm;" the little required here and by the Wursungalli is imported from Moculla by the vessels taking guano from Burut Island. The only trade followed here besides that of blacksmith, which is peculiar to the Somâl, is that of sandal-making; the jewellery worn by the women is of Arab manufacture, and is brought from Moculla. The arms used by the Somâl are a kreese, a buckler, and two spears or a bow and arrows; the spears used by them are of many different shapes and sizes, all having names. The bow and poisoned arrow are common to all the Somâl, but more especially the Wursungalli, who are very expert. The Mijertheyn do not seem to be at all good shots; the bows they use are large—6 feet—and the arrows about a foot and a half. The poison is here extracted from two trees—the Minhidds and Abertehi—by Midgâns; no one, man or woman, must be present while it is being prepared, or it has no efficacy. The only means the Somâl have of obtaining fire is by the primitive method of rubbing two sticks together; three trees supply suitable wood for this—the Dêr, Néarer, and Khu. Flint and steel are unknown. The games of the Somâl are numerous but very simple; two of them are "Shâh" and "Shunterad;" the former is the favourite, and is played with twelve stones or shells: it is very similar to the Arabic game "Sudur." They are inveterate gamblers, and frequently lose all their property. From their intercourse with Aden, various Indian and English games are being gradually introduced among them.

Though the language spoken throughout the whole country is substantially the same, and a man of one part is intelligible in any other, yet the difference between the Burri and the

Gulbêdh is at least as much as the difference between the Arabic of Egypt and Yemen; this lies noticeably in the idioms, and in the usage and pronunciation of certain words: for instance, a camel in the Gulbêdh is called "Awur," in the Burri "Ratti;" a foot in the former is "Loog," in the latter "Uddin;" a girl is "Gubnd" and "Gubuj" respectively.

Regarding the origin of the Somâl, it seems more than probable they are descended from a number of Arabs who immigrated into the country, and mixing with the Galla inhabitants soon multiplied and drove back into the interior all those, Christian and Pagan, who refused to conform to their religion, and thus occupied the country they now hold. Their language and traditions both support this hypothesis. The former is composed almost wholly of words derived either from the Arabic or Galla tongues, the latter predominating, and their traditions universally refer to Arab ancestors, whom they hold in great veneration. They assign a period of between four and five centuries to this immigration, which was probably from Hadramant, and speak with pride of the readiness with which the Moslem faith was embraced, and the fact of its having been introduced without the intervention of the sword. I learnt at Hunda that the Mahra tribes have a tradition that the Somâl are descended from them, and they call them invariably "Beni Am," or "cousins," to this day. The name of Somâl, and the time when they first began to be called by it, still remain in obscurity. I expected to have found some light on this point in the *Kitâb Futuhel Habsh*, but have been disappointed, as that work gives no account whatever of the early history of this race. The root of the word in Arabic (صلى) is, according to the *Kamoo*, in one of its significations, "lofty hills covered with trees," and this name may have been applied to the country (and appropriately so) by the Arabs; but it does not appear to have been so known to the ancient writers, and it strikes me as possible that it may be an anagram of the word Mosyllon, the ancient name of Berbera or Kurrum: for the whole region, as far as Cape Guardafui, was called the Mosyllitic Coast. These are, however, mere conjectures. The Somâl distinguished between the two sides of their country by the terms Burri (the eastern) and Gulbêdh (the western): these are well known and recognized by the Arabs, by whom they are named Makhar (ماخر) and Dabir (دابر) respectively. The former includes the Mijjertheyn, Wursungalli, and Dulbanta tribes; the latter the Habr Awal, Habr Tul Jaala, and Habr Gerhajis, &c. These terms are quite territorial—not tribal, and are more comparative than nominal. Thus Berbera

is Gulbêdh to Kurrum, and Meit is Burri to Ain Terâd. The Gulbêdh tribes are much more turbulent and predatory than the Burri, and are in a chronic state of warfare and anarchy; while the Burri are, as a rule, peaceable and orderly, and generally loth to shed blood. The same customs obtain through all the Somâl, and some of the old pagan rites are still retained. Like the races north and south of them—the Afar and Sowahili—the Somâl are of the Shafeea school of Moslems. The Mijjertheyn is the only tribe under the sway of a Sultan; the Habr Awal, Wursungalli, and Dulbhanta have Gerâds, and the Ugaden have a chief called Ogass to reign over them: the authority of all of them is more or less nominal, and is almost limited to collecting men in war time. The present Sultan of the Mijjertheyn is a boy of ten years of age, and the country is under the regency of his uncle, Moosa Othman, in association with three great-uncles. Moosa would have been elected Sultan on the death of his half-brother, Mahomed, according to custom, but he was ineligible, as I have already explained, on account of his mother being a Wursungalli, one of the Darrood tribes. The boy's mother is a Habr Gerhajis woman and a Bhadir. The Mijjertheyn are undeniably the most inoffensive of all the Somâl; their country is extensive, reaching from Kell to Gerid, a town on the east coast a considerable distance south of Ras Hafoon. The "ashoor" collected at Bunder Marayah is distributed among the Bhadir families there; the Sultan receives a share of it at this and two or three other towns, but his revenue is decidedly limited. "Abbans," or protectors, have to be taken here, as at Berbera, by Arab and other merchants frequenting the port, but they do not receive the same percentage or commission, but merely a small present. In the Gulbêdh these men are necessary to the stranger; but here, where there is ample security of life and property, they are a mere tax.

There are three outcast tribes, namely, the Tomal, Midgân, and Ebir. The first are blacksmiths exclusively, making arrow and lance heads, fish-hooks, and such-like small requirements of the people. The second, Midgân, are a very numerous body, and have no particular occupation, but usually engage themselves as servants, herdsmen, &c.; these two classes intermarry among themselves, and sometimes also with the Somâl. The last race, Ebir, are the pariahs of the land, and are distinct from and inferior to both the preceding; they are by profession jugglers, and perform at weddings and feasts: it is reported that they habitually sell their children, and they are never allowed to accompany the Somâls in their wars. The origin of these outcast tribes is unknown to me; they are undis-

tinguishable from the Somāl in appearance or feature, and are not slaves—for there are plenty of these, domestic slavery being rife throughout the length and breadth of the Bur Somāl.

The coast from Marayah to Allooda has three towns not laid down in the charts, namely, Gurso, Kesulli, and Habo. Allooda is a larger town than Marayah, but its houses are all of matting, —there are none of brick; it has the advantage over the latter place of having a lagoon, or circular bay, affording very fair shelter for native craft, while Marayah is an open roadstead. The exports and imports of the two places are the same. Water is as scarce at Allooda as at Bunder Marayah; buglas generally water at a place a few miles east, named Booh, where there is an unfailing supply. Allooda and several of the neighbouring villages are inhabited mostly by the Sowarkeroon tribe, a savage clan of the Mijjertheyn. The country around and to the south belongs to the clan of Othman Mahomed. The inhabitants of this coast, though not exactly deserving Ptolemy's name of Troglodytes, are in truth little removed from savages, and use the holes and caves in the high range of hills overhanging the sea to store their products and articles of export in, during the close season. From Ras Asseer (Cape Guardafui) to Ras Hafoon the coast is bleak and sterile, with two or three fertile valleys. The northern half, to a little beyond Ras Binna (or Bashikail), is bold and precipitous, while the lower part is low and sandy. It is very thinly peopled, and has only two or three villages and one town, Hunda. The "khors" or bays on the north and south sides of Ras Hafoon are used as harbours during the south-west and north-east monsoons respectively; the isthmus is a narrow sandy strip 6 miles in breadth, and covered with camel grass and Shorabushes; there is a hamlet on each side, but sweet water is only obtainable on the south. On the top of the square table-land of Hafoon are extensive pastures, on which camels, horses, cattle, and sheep are grazed in the season. Fish are plentiful enough, and furnish the means of subsistence to the coast-dwellers; but the inland population hold fish as much in abhorrence as fowls. Sharks' fins, for China, are an important article of export, and several Mahra Arabs reside here for the purpose of capturing the fish. Hunda is a straggling town of mat huts extending over two miles, with a population varying from 500 to 1000, according to season. The men are all fishermen or frankincense-gatherers, and the women employ themselves in weaving mats, of which bales and bales were lying ready for shipment. The commerce of this place is confined to the Sowabil and the Arab ports Moculla and Sheher, the former supplying corn, and the latter cloth, dates, &c. The

exports are "mulij," frankincense, shark-skins, ambergris, and matting. The supply of ivory has almost ceased, and there is only one elephant-hunter left in the town. The houses are all circular and portable, and are erected in two or three hours—a light framework of wood with a double layer of mats over it, and the house is complete; a small courtyard or kraal of thorns is then made in front. The doors all face north or south, according to season,—as the wind is very high and inclement. At this time it was very cold, and the sharp contrast between the climate here and at Bunder Marayah, where the heat was peculiarly fiery and suffocating, was decidedly unpleasant. The country close around is low and barren, the soil being sand, detritus, and coral overlying limestone. Coral and shells are met with, miles inland, showing that the country has been at some former period under water; the caverns and watermarks on the cliffs of Ras Hafoon are further evidence of this. The vegetation has the usual appearance—salsolaceous plants, with a few doum palms and a stunted growth of acacias scattered over the surface. About a mile to the north of Hunda the shore takes a curve which is not marked in the chart; bugalows anchor here—the only sheltered spot to be found. I sounded 17 feet close in. Close by is a large wady forming a salt lagoon in the monsoon; its broad shallow bed shows, however, that much of the rain is absorbed on its journey, and that little finds its way to the sea. The residence of the Sultan is at a place called Adowa, about 30 miles north-west of Hunda; it is close to the Wady Jaeel or Jumbulhoody. The halting-places between Hunda and Bunder Marayah are Schow, Adowa, Modeyaum, Yeran, and Eyl Jâl, averaging about 20 miles from each other; the last place is in the Wady Yeran, which rises in a plateau of the same name, and enters the sea near Bunder Khor. Two other places near the road are Sussi and Gulool. The two most important valleys between Ras Assear and Hafoon are the Wady Tohen and the Wady Jumbulhoody, called in its upper part the Wady Jaeel. The soil of the former is rich, and produces maize, tobacco, jowaree, dates, Theban palms, tamarinds, plantains, and onions; the introduction of most of these is due to a Hadramaut Arab who settled here some years since, and taught the inhabitants how to cultivate them. The Somâl, I believe, are ready and willing enough to turn to agriculture and grow their own corn, but they require some one to set them the example. The eastern point of this country is formed of a series of hill-ranges or plateaus, known as Jebel Goraâd, Girdif, and Bor Burhai; they are tolerably well wooded, and are rich in valuable gum-trees—frankincense, dragon's blood,

tragacanth, arabic, &c. And here I may remark what a very unnecessary mystery and puzzle has been made of the name given to this horn by the Portuguese—Cape Guardafui. Bruce insisted it should be called Gardepan, or the Straits of Burial; and others have derived it in ways equally fanciful—even the accurate Cruttenden was misled. It is, in fact, simply the native name for this part, and is the only one known to the inhabitants, viz., Girdif or Girdifo. By the local shipping and by pilots, however, the point is usually called by its Arab name, Ras Asseer. The only Europeans who have ever traversed this country were some of the troops belonging to the Bombay column of the army in Egypt in 1801. The transport in which they were returning to India having been wrecked near Ras Hafoon, they succeeded, after great hardships, in making their way along the coast to Bunder Alloola, where they were protected and entertained by the natives until they were taken off, about two months after. The watershed of all this country is the southern face of the high range of limestone hills fringing the north coast, and as indicated by the Mogâl, Jaeeel, and other rivers on this coast, clearly lies from north-west to south-east. The Wady Jaeeel, called in its upper part the Wady Gebee, rises, I was informed, somewhere near Kurrum, and after a course of 200 or 250 miles falls into the sea about 10 miles below Ras Hafoon, at a place called Hashiree. The Wady Mogâl enters the sea at Illig, a place five days' journey further south.

The ancient geography of this coast, as given in the oldest and best account we have of it, the "Periplus of the Erythraean Sea," has become more clear and intelligible since our knowledge of it has increased, and we have had the accurate surveys of the Indian Navy to refer to for its elucidation. But although the more remarkable geographical features are easy of recognition, from the fidelity with which they are described by the author, there is yet a considerable field left for conjecture with regard to many places. One cause of this is the want of uniformity in the names given, some being Greek, some native, and others Arabic: this is perplexing, and warns us not to rely too much on them, though one of our chief means of recognition.

The first place mentioned in the territory now occupied by the Somâl is Mundus: this I consider to be Zaila, on account of its description as a safe anchorage under the protection of an island—a circumstance that suits Zaila alone. The title of emporium given to it, the peculiarity of its exports, and the fact of the course being from hence eastward, are confirmatory of this view. We now come to Mosyllon, the most difficult, as it is the most important, of all the localities we have to discover

the site of. It was the chief emporium on the coast, and is described as a promontory and a bad roadstead. According to the distances given, it ought to be carried out at least a hundred miles further east; but in fixing it at Berbera, the chief inducement is that the latter holds pre-eminently the same position that Mosyllon did, as the principal town on the coast, and this appears to me an argument of sufficient weight to turn the scale in its favour against all other considerations. The latitudes and longitudes of Ptolemy add greatly to the confusion here, for they are at variance and irreconcilable under any circumstances. The evidence, in short, is against Berbera, but the presumption is much in favour of it. The river of Nilo-Ptolemæon may be fairly identified with the Wady Maareg at Meit—the distance given—of two days' sail, or 1000 stadia (100 miles), coincides sufficiently. Tapategè is uncertain, for there is no clue, either of distance or site, to guide us, and I can find no name at all similar to it, but it lies between Meit and Bunder Marayah. The locality of the lesser Daphnon is equally doubtful, and for the same reasons it may possibly be the river near Bunder Khor, or Butialo, called "Tugwena," "the large wady," by the natives. Cape Elephant is, of course, Ras Feeluk, known on the spot as Bor Moorg. The greater Daphnon, or Akannai, is unmistakably identical with the Wady Hakèr, or Rio de Santo Pedro of the Portuguese, which, as I have already described, debouches from the hills between Gurso and Marayah. This is the sole instance in which both the Greek and native names are given, and it enables us to establish the identity of the place beyond a doubt. The River Elephant must be the Wady Afskaliya, that enters the sea near Allooda, a short distance east of Ras Feeluk. From this there is no place mentioned until Cape Aromata, or Guardafui, the most prominent feature on the coast, whereas we are expressly told the coast falls to the south. Continuing along here, the first name we come to, Tabai, was formerly identified by Dean Vincent with Hafoon; but it must now be referred to Ras Binna, reserving Hafoon for Oponè. The description of Tabai, the name (given by Ptolemy as Ponon Komè, evidently the village of Binna), and the distances, are sufficiently conclusive on this point. Between Aromata and Tabai also it is called the Bay of Beyla: now Belwa is a village about 20 miles from Binna, being at the north of the bay of which Ras Binna is the southern point. That Oponè, or Ophonè, is Hafoon, cannot be doubted—the similarity of name is too striking to be passed over, and the fact of its being called an emporium, a character it still deserves, puts it beyond dispute. There is no port anywhere near to the south that answers to the description at all, while the whole produce of the valley of

the Jaeel is brought here, and Cruttenden, who compares the fair to that of Berbera, testifies to the number of merchants resorting to it, and to the value and briskness of the trade carried on.

Having found time, whilst waiting at Hunda, to pay a hasty visit to the Wady Jaeel, the luxuriant vegetation of which was described to me in very eulogistic terms by the natives, I hired a camel and started one afternoon in company with five Somalies. Our direction at first lay s.s.w. as far as Bor Kalha, a low plateau of seven or eight hundred feet elevation, when we turned w.s.w., and after three hours halted for the night at the edge of Khor Hurdea. At midnight we rose again and made our way over a plain of sand-hills, topped with bushes, to Eyl Dokanaya, a bubbling spring of brackish water on a low eminence, which we reached just about sunrise. Large numbers of female camels were being watered at this and at a similar spring close by. The water was quite warm when we arrived, but became cold as the day advanced. Below the sand the hillock appeared to be composed chiefly of sandstone, but also of limestone and agglomerate. The north point of Hafoon lies direct east of this, and the edge of the table-land north of Hunda E.N.E. After resting here for a short time, and receiving the customary peace-offering of camels' milk from the Bedonins, we pushed on again, and travelled for some hours over a sterile, stony plain, thinly grown here and there with acacias, until we reached the Wady Jaeel, along the steep bank of which we continued until we found a path, when we descended and camped in a high well-sheltered patch or island in the bed. On approaching the wady, the appearance of it at a little distance—a bright green streak in a brown, sterile, and hilly plain—was singularly pleasant and refreshing. The banks are deep and precipitous, varying from 50 to 200 feet, and the bed is in no part less than 700 yards wide, and in most places much more, showing that a very considerable body of water is carried down in the monsoon. The bed is extremely well wooded with some large trees, especially in the centre, where the ground is high, forming islands in the flood: the wild date and doum palms were particularly abundant, the fruit and leaves being an important article of commerce. At this time no water was running, but there were long shallow pools or reaches in places, and it could be obtained anywhere by digging a foot or two deep in the sand. The few people I saw were very friendly, and appeared quiet and industrious, but miserably poor: the men were employed in splitting, drying, and stringing "mulij," and the women in mat-weaving. Their mat huts were scattered all along the wady, with thorn kraals for the few half-starved sheep and goats. There is no cultiva-

tion, and the fruit of the wild date seems a staple article of food. The river is said to have been the resort of wild elephants until three years ago; since then they have only reappeared once. The next morning we pursued our journey up the wady, direction west, passing after a short time a broad, deep wady, on our left, called the "Tug Bedoo," and about 1 P.M. halted near Bor Mogâh, a high tabular-formed hill. The character of the country remained unchanged, but the vegetation in the bed of the wady gradually decreased, while the banks became deeper. The universal drought in the country had visited this place: they had hardly had any rain for a year, and the river was dry in consequence. All human habitations had now ceased, and I was told that none were to be met with for a long distance in front; I therefore saw no advantage in pushing on, and began to retrace my steps. We returned by the same road, and arrived at Hinda the second day. From the time of actual travelling on both ways, thirty-six hours, I had probably ascended the river about 45 or 50 miles. The hills were all entirely destitute of verdure, and I saw no frankincense or gum-arabic trees anywhere on the journey: the only animals I noticed were the hyena, jackal, hare, and two species of antelope, and there were said to be leopards. Birds were very numerous in the wady, but none on the plains.

The Burel Somâl is altogether a most interesting country, and it is no little opprobrium to us that it has remained so long a mystery, for there are few which offer greater attractions of research and greater facilities for exploration to the traveller. True, we have had a few glimpses at it, and the writings of Cruttenden, Rigby, and others, have left little to be gleaned superficially; but how little we know of the interior, and of the tribes beyond the seaboard—absolutely nothing! The geography, resources, and productions of the country—the condition, distribution, and inner life of the people—have all yet to be written, and offer a wide field for inquiry to the first European who shall visit them.

LIST OF USEFUL TREES AND PLANTS.

No.	Names of Trees.	Uses.
1	Humâr (T. Indica)	The tamarind tree.
2	Weggir (Diospyrus ebenus)	The ebony tree.
3	Dar (Aloe vulgaris)	The aloe plant.
4	Ow (Hyphæne Thebaica)	The doum palm.
5	Meiro (Phoenix dactylifera)?	The wild date.
6	Gubuldi (Indigofera)	The wild indigo plant.
7	Jellelo Geyl (Cassia Senna)	The senna plant.
8	Jellelo Ari (Cassia)	Ditto ditto.
9	Ankokib (Acacia vera)	Yields gum arabic.
10	Adâd (Acacia)?	Ditto ditto.
11	Kûrrâ (Acacia Babool)	Medicinal, fibrous, &c.
12	Yeib (Amygdalus communis)	The almond tree.
13	Mehr Add (Boswellia Bhau Dajiana)	The frankincense tree.
14	Mehr Madow (B. Carterii)	Ditto ditto.
15	Boido (Boswellia —)	Ditto ditto.
16	Yegnar (B. Freecana)	Ditto ditto.
17	Deyib (Cedrus —)	The cedar tree.
18	Hasashdin (Pinus)	The Somali pine tree.
19	Didthin (B. Myrrha)	The myrrh tree.
20	Bôli (Asclepias gigantea)	Medicinal, fibrous, &c.
21	Gôb (Rhamnus Hebeca)	The jujube tree.
22	Hodthai	Yields a gum.
23	Gegabood	Medicinal.
24	Debbi	Lance-sticks and clubs.
25	Jirmal	Bark used in tanning, &c.
26	Hlglo	Fruit eaten.
27	Ilkattus (Mimosa Serissa)	The Sirrus tree.
28	Gararoor	Edible berry.
29	Marêr	Fruit and timber tree.
30	Ohob	Fruit eaten.
31	Gâmûr	Yields gum.
32	Fillâh fillâh	Yields a fragrant gum.
33	Adthl (Capparis Sodata?)	The Arâk tree.
34	Maroh	Twigs used in basket-making.
35	Nêlik	Ditto ditto.
36	Karûn	Yields gum.
37	Murayo	Gum and fruit tree.
38	Dafaroor	Fruit tree.
39	Sûksûk	Fibrous.
40	Dural (Ficus religiosa)	The peepul tree.
41	Birâ (Ficus Indica)	The banian tree.
42	Donsamo (Pistachia lentiscus)	Yields gum mastic.
43	Gulool	Bark fibrous, and yields red dye.
44	Angeel	Valuable timber and fruit tree.
45	Habaghadi	Yields gum.
46	Hig (Aloe)	Fibrous.
47	Miniddo	Poison extracted for arrows.
48	Aberteli	Ditto ditto.
49	Dunkâl	Ditto ditto.
50	Owbutta	Yields gum.
51	Kaba Araya	Yields a red dye.
52	Fouah (Rubia tinctoria)	The madder plant.





IV.—*A Journey in Yezo.* By Captain T. BLAKISTON, F.R.G.S.

[Read February 12th, 1872.]

I.—THE SOUTH-EAST COAST.

FURNISHED at the government office in Hakodadi with certain instructions and the requisite authority to travel as a native official, I sailed out of that port in the *Akindo* on the 15th of September (10th day 8th month), 1869.

During the night we experienced a head wind and heavy easterly swell, but worked past Siwokubi Saki (Cape Blunt), and, helped by the current, which invariably sets towards the Pacific through the Strait of Tsugar, we were off the volcanic Cape of Yesan by 6 A.M. the following morning. The weather was dirty and rainy that day, and we made little progress. At sunrise on the 17th we rounded Cape Yerimo, the principal point on the south-east coast of Yezo, a bold, sharp promontory of moderate height, terminated by low land with several pointed rocks above water off the end of it, and backed by a high mountainous country. There is fair anchorage during westerly winds on its eastern side. An island marked on the chart, about eight miles east, as "*Kumoiwatara*," I am assured by captains of vessels does not exist, which information is confirmed by no such island being laid down on Japanese maps. In fact, the whole coast-line of Yezo to the eastward of Tsugar Strait is not only imperfect, but so untrue on the British Admiralty and other foreign charts—which are but copies—that it can hardly be said to be a guide at all for navigation in those waters; consequently, before a commander has become personally acquainted with the coast it would be prudent for him to provide himself with a native pilot.

At the present time commanders of Japanese vessels generally sail by foreign charts, for although there exists a fair enough map of Yezo, one of the four sheets called "*Quan-han gisokin Nipon ehize*," published at Yedo, it is only a map, having so far no pretensions to a coast chart, that neither reefs nor rocks, and in many cases not even islands, are delineated on it, while the depth of water is nowhere indicated, but the whole sea along the coast is covered with names of fishing-stations, so thickly, that no room is left for the insertion of other information. As a map of the interior it is most elaborate, and great praise is due to both the native surveyors and the compilers of it, if it is as true in all parts as those I have had opportunity of roughly checking. But, like most other Japanese plans, the mountains are laid down in elevation, and even in that way only the very highest

ones are delineated clearly, while all the rest of the land between the rivers is completely covered with pyramids, also in elevation, to denote high land or "yama." Such a plan, for geographical or nautical purposes, must of course be almost useless, it being impossible to discover where mountains are in ranges or detached masses, or which is high coast or low. Moreover, I am inclined to think, that, although relatively correct as to bearings and shorter distances—though I did not carry the requisite instruments on my journey to be enabled to give a decided opinion—this map may be considerably in error in latitude, and probably much more so in longitude, which would render it valueless for computing the areas of districts, should such at a future time be found necessary, or laying out lines of roads with any accuracy. However, it may serve the purpose of the Japanese for some years to come, so far as the interior is concerned, but must be at once rejected as a coast chart, to which it has not the slightest pretensions. This map is said to be after the survey of, if not compiled by, Matsu-ura Takaesiro, now a "hangan" of the Yezo Kaitago government at Yedo.

On the 18th we passed along the Kusuri coast, and saw the *Khankai* lying off the quai-sho, where there is fair anchorage for a small vessel, except with strong winds from south-west to west. She was then landing a cargo of seaweed, under charter by the government. By evening we were off Akis Bay, 200 miles from Hakodadi, but being rather doubtful of the local knowledge of our pilot, Captain Scott thought it prudent to stand off to sea for the night. The appearance of the sea along the coast is of a dirty dull colour, strikingly distinct from the deep blue of the "Kuro Siwo" stream which passes up the Sea of Japan and through the Strait of Tsugar. Its temperature there was ten degrees lower than the water of that stream, and we found an eddy current setting to the westward. The following morning we stood into the bay.

The country around Akis Bay is mostly high land, without any prominent hills, which I believe may be said generally of the whole region from Kusuri to Nemoro. It is generally pretty thickly wooded with deciduous or hard-wood trees, such as oak, maple, willow, &c., interspersed with a mixture of coniferæ. Where devoid of woods the hills are usually covered by a dense growth of dwarf or scrub bamboo, from a foot or two to several feet in height, according to the nature of the soil, while on the lower ground and swamps high grass grows luxuriantly. The geological features show rocks of the secondary series, conglomerate, sandstones, and slaty shales. The soil appears good, being mostly a dark mould, but the few dygoons

and turnips grown about the fishing-stations fail to indicate what might be produced by proper cultivation.

Seaweed is cut along the coast and among the reefs near Daikoku Islands, and herring are taken on the west side of the bay. The lagoon to the east of the quaisho produces large quantities of oysters.

The principal house at the quaisho is built in the ordinary Japanese style, but is of far larger size than usually seen in the towns, and everything about it seems large in proportion. At one end of the building are several apartments fitted up with papered sliding doors and windows for the accommodation of government officers and distinguished travellers. In the middle is a large room with an open hearth of sufficient dimensions to take on large logs of firewood, round which the Ainos and lower people of the establishment squat cross-legged, smoking and chatting when they have nothing to do. An office is half closed off from this place, and the kitchen is on the other side. Outside the back door are large caldrons, used for heating water for washing and various purposes, and for filling the warm baths, so indispensable in a house where travellers are entertained. The ground before the house is neatly levelled, and enclosed in the form of a quadrangle by a soil bank, in which are two gateways with posts and upper cross-bars, painted black in the usual official style. Separated from the principal house are carpenters' shops, boat-sheds, houses for some of the Ainos, and storehouses for the reception of rice, saki, rope, straw-mats, nets, and other necessities for carrying on the fishing business, and for storing the produce of the fisheries. At a short distance to the westward, on the rise of the high land, is a little temple, which is a good mark for taking the anchorage bearings of a vessel. Below it, but hidden by trees, is the priest's house, with a garden laid out about it; and from this, about a quarter of a mile inland, a stockade encloses a collection of buildings formerly occupied by government officers and their retainers, but was tenantless when I visited it. A narrow path runs up the side of Bara San, whence a good view is obtained of the greater part of the bay.

The timber used in the construction of buildings is obtained from the Marer Hills, being a species of fir called "*Todo Matsz*;" a clean and straight-grained wood, easily worked, and splitting readily for laths and shingles; but it shrinks and expands very much with variations in the humidity of the atmosphere. A spruce known by the name of "*Yezo Matsz*," is preferred for boat-building; and in the hills, at no great distance, is cut of large sizes.

Captain Scott and I took several strolls about the neighbour-

hood, one of which was to the top of a high bluff overhanging the entrance to the lagoon, where we obtained a good view of that sheet of water. It seemed to be nearly circular, of between 3 to 4 miles diameter; with numerous shoals and mud-banks, leaving only narrow channels at low water. The Ainos navigate it in wooden "dug-out" canoes, about 20 feet in length by a breadth of $2\frac{1}{2}$, with sometimes weather-boards or bulwarks lashed on the gunwales with stringy bark from their native woods, or rattan obtained from the traders. On the north side of the outlets of this lagoon there is a considerable Aino village, and a few huts near the quaisho. The dwellings of the Ainos in all parts of Yezo are pretty much of one form, being composed of one inner chamber and a sort of porch. The roofs slant to the ground, with a chimney at the end, over the porch, and an open hearth below it. They are composed of light poles, covered with birch bark, and thatched with reeds, grass, or scrub-bamboo. A small store-hut, either of the same materials or of wood, raised some feet above the ground, stands alongside; and usually some strong wooden cages, likewise raised on stakes, contain pet bears and eagles, for which these people seem to have some superstitious veneration. Numerous half-starved dogs are invariably loitering about.

The men are usually stout, well-made people, of rather low stature, with very hairy bodies. The hair of the head and beard is commonly allowed free growth, although in some districts many of them follow Japanese fashions in this respect. A well-fed male Aino is not a bad specimen of humanity, but the women are not to be compared with them. They seem to age very soon, and get shrivelled up in their features; caused, perhaps, partly by the hard work they undergo, as they carry wood and water, and perform most other menial services. But I have seen some young girls very good-looking, save and except always their lips, which are invariably tattooed; a fashion, I fear, it would take some time to become so familiar with as to admire. These people are all "subsisted" at the expense of the "Okiyainin," the lessee of the fishing-coast from the government. They receive a daily allowance of "go-ngo"—about a quart, and a little over a catty, of rice per head. The able-bodied men, women, and boys, work at fishing, cutting and hauling timber and firewood, carrying produce, or as servants attending to house and general work about the stations. They likewise hunt, and, as may be imagined, are expert at taking bears, deer, foxes, &c.; but the produce of the chase has to be delivered up at the quaisho, for which a small remuneration is made them in presents of cotton cloth, thread, saki, tobacco, and such like. They generally hunt with bows and

arrows, but a few matchlocks are lent them from the quaishos. The women employ part of their time in manufacturing a coarse kind of cloth, called "atzis," made from the inner bark of a tree which grows in the country. Some of the men are pretty fair carpenters. Their proper language is very different from Japanese, having many words ending in consonants, the entire want of which is a peculiarity of the latter language. The tone of voice of the men is by no means unsonorous, while that of the women is a clear falsetto. In pulling boats or hauling at nets they almost invariably sing; and frequently, when at work, keep up a constant jabber, laughing at one another's jokes; doubtless the effect of their dependence on their masters, and the little need of forethought, causes the cares of life to press lightly on them, for they are a very lively people. Most of those I met spoke Japanese, more or less; but the usual language in which the Japanese speak to them is a mixture of the two. As clothing, they generally wear a loose "atzis" coat, bound round the waist by a girdle of some sort, and a breech cloth; to which, in cold weather, they add leggings, and deer-skin mocassins, with a deer-skin overcoat, mittens, and a warm cap covering the ears and back of the neck. In summer, however, their brown skins are oftener exposed than otherwise, showing their extremely hairy legs; while the thick, long crop of hair on the head, and full beards, are sufficient proof against any ordinary weather.

At Akis, I had an opportunity of observing the seaweed fishery, of which a short account may here be given:—

After remaining a few days at the quaisho, the *Akindo* was moved about 5 miles down the bay, and anchored off Ko-Daikoku Sima, before-mentioned, in 7 fathoms; where, being favoured by remarkably fine weather, a part cargo of seaweed was loaded. This article is one of the greatest exports, both for the native and China markets, from Yezo. It is collected in many parts of Japan, but the great source of the favourite kinds is the south-east coast of Yezo. Requiring simply the labour necessary to collect and dry it, this business is probably the most lucrative of any followed by the fishermen of the north. The season extends from the 6th to the 9th month, say July to October, during which time a large number of people are kept constantly employed. In its fresh state, the weed is in appearance much the same as the "kelp" of Britain, in lengths from 20 to 40 feet. The mode of collecting it is for three or four men, according to the size of the boats, to work together. In the case of three, two go out in a skiff in fine weather between and about the reefs and islands, and fish up the weed by means of a pole with a crook on it; while their comrade remains on

shore in charge of their straw hut, cooking, and looking after the seaweed lying out to dry. On getting a full boat-load they return, and haul out the seaweed on the beach, laying out the strips in parallel lines to dry on the sand. Every evening, or in the event of rain, it is either housed or collected in heaps and covered with mats. Two or three days of fine weather suffice to dry it, after which it is cut into lengths, usually 3 feet 9 inches, and tied in bundles of half a picul each. A continuance of wet weather will cause the seaweed, before it is sufficiently dried, to heat and spoil, when it has to be thrown away. Both Japanese and Ainos are employed by the fishing-masters for this service. The former are engaged by the season at Hakodadi in June, and sent up the coast in junks or by land. Their usual pay is 10 rios for the season, with food, and an additional 10 rios between three of them if they make in the season 100 kokus (of 3 cwt. each) of dried weed, which they can usually do in a favourable summer. Including superintendence, food, mats, wear and tear of boats and other plant, I calculate the prepared seaweed to cost about 110 rios per 100 kokn. To this has to be added the government duty, which hitherto has not been fixed by any certain tariff; but each fishing-master has paid an annual sum as rent for a certain part of the coast. Under the new 'Kaitago' régime, this duty, in the districts retained by the government, is now fixed at 30 per cent. of all produce, with an additional 6 per cent. on arrival at Hakodadi. Selling on the coast, the fishing-masters always make 100, and frequently 200 per cent. profit, so it is not astonishing that the principal men who have engaged in this business since the opening of Japan to foreign trade have mostly become rich. The export of this article from Hakodadi in foreign bottoms alone amounts to over 100,000 piculs per annum, equal to 6000 tons.

The combu (seaweed) which the *Akindo* loaded in Akis Bay was from the two Daikoku islands, and the main shore north-east of them, that from the smaller island being much the best, from the absence of sand, owing to the drying beach being of a shingly nature. This small island is, however, rapidly decreasing in size, the rollers from the ocean constantly washing away the rather soft slaty shale of which it is composed in regular strata, dipping at a steep angle E.S.E. In fact, the top of it is reduced to a sharp ridge, with a steep side towards the ocean; and I believe in a few years it will cease to exist, any more than as a part of the reefs now extending far to seaward outside of and between it and the mainland. It seems as if in former times both Daikoku islands were a part of the main, but have become separated by the encroachments of the

ocean; otherwise it is hard to believe the form of Akis Bay to have been so incorrectly laid down by the early Dutch and other navigators as it is still retained on our latest charts.

On the morning of the 29th September, the *Akindo* beat out of the bay under reduced sail, and rounded the outer part of Daikoku Sima at 10.15 A.M. We were bound to Hamanaka Bay.

Hamanaka is a great fishing-district, employing a large number of both Japanese and Ainos; during the summer season, commencing with the fourth month (May), a fish called "komai" is caught. In the following month herring come in in abundance; they are seined, and boiled down for the oil which is extracted from them; the residue, being dried, is called "kas," or fish manure, and forms one of the greatest articles, in bulk, exported from Yezo to the southern provinces, where it is used on cotton, sugar, and other lands, as a fertilizer. In the sixth month (July) the seaweed harvest commences, and continues till the close of October, and sometimes, if the season is favourable, even later. A very large amount is annually taken in the manner previously described. Some salmon are also caught in this bay; they were just commencing to run when we were there in the first few days of October, and were being taken by set nets run off the shore and anchored out. One day we went over to the Kiritap shore, where one of these nets was set, and had just been emptied, the catch being 150 fine clean fish, of which we obtained four for our own use, weighing $17\frac{1}{2}$ lbs. each. At the close of the fishing-season, the Ainos and most of the other fishermen leave, a few people only remaining during winter, when they are employed in cutting and hauling firewood, of which large quantities are requisite for the fishing-season. There are about thirty small rough Yezo ponies belonging to the place.

On the morning of the 6th October I landed through the surf in a small boat, pulled by a couple of Ainos, one of whom carried me ashore dry-shod on his back. The *Akindo* made sail and passed out of the bay by the east side of the reef we had run past on entering. I was thus left alone at the eastern end of Yezo with a fowling-piece, powder, shot, and bullets, a couple of pairs of blankets, a change of clothes, a good pair of boots, a pocket compass and note books, and a Japanese map of the island, to pursue a journey hitherto unattempted by any foreigner. What I saw, the mode of travelling, and how I was treated by the natives, compiled from the daily notes made as I travelled along, I shall describe. It must be borne in mind, however, that the state of the country at that time was as it

had been for many years previous to the colonization—"kaitago"—scheme inaugurated by the government in the latter part of 1869—so that future travellers must expect to find some important changes, it is to be hoped for the better.

II. THE EASTERN PART OF THE ISLAND.

On the morning of the 7th October I rose from the matted floor of the small room in which I had slept, and went out to the beach to get a refreshing draught of the bracing air, as well as to show the inmates of the quaisho that I was anxious to start on my journey.

A few minutes sufficed to put my little baggage in travelling shape, and by the time I had got through a light breakfast a couple of ponies were brought, on one of which my two leather bags were lashed to either side of a pack-saddle, on the top of which a Japanese, who was to act as my escort and guide, mounted; and, with a blanket over a native riding-saddle lent me by the master of the establishment, I bestrode the other one, taking my gun, prairie fashion, in the hollow of my arm, and started.

Passing by the huts along the shore of the bay, we ascended the plateau-like land, and followed a narrow horse-track taking a northerly direction. On this course we travelled over a usually level but sometimes undulating country, tolerably thickly wooded with oak and birch trees of moderate size, the ground being free from underwood, but covered with short mountain-bamboo scrub, fern, and long grass. But few leaves had yet assumed their autumn colours. The upper soil was of a dark vegetable mould, with a clay, and in some places gravelly, subsoil. I saw no rock *in situ* all day. Having made about 7 miles, we came to a shallow valley running east, in which we struck the track between Akis Bay and Nemoro, which has to be followed to reach the former place from Hamanaka; the distance by this circuitous route, passing round the north side of the lagoon to the quaisho, is called $9\frac{1}{2}$ ri. We took the opposite direction, turning to the eastward, and followed along the southern bank of a small but deep stream running with a tortuous course along the bottom of the valley, where I saw evidence of Ainos having been spearing salmon, which were then just commencing to run up to their spawning-places. This valley, though retaining much the same character as the adjoining country, has considerable spaces clear of woods, or only sparsely dotted with trees, and appeared to be well adapted for agriculture, but there are no signs of its having been attempted anywhere. There are some swamps in

it, and a few small tributary streams fall in on either side, which, when the banks are steep, are spanned by small rough bridges, otherwise the track passes through them.

The worst parts of the swamps have split timber laid transversely, forming a narrow "corduroy" roads, or broader rough planks are laid lengthwise. Sometimes turf, gravel, or sand is put on the top for ballast, but usually such is dispensed with, and being in miserable repair, these kinds of roads are not the very best for horse travelling. They are, however, the only attempts at roads in any part of the island, and are never resorted to unless the natural state of the country is such that travelling would otherwise be almost impossible. Elsewhere the sea beach, or the rough mountain side, with the trees cut away sufficiently to allow of the passage of pack-horses in single file, are the "roads" of Yezo. It is to be hoped that as the attention of the government is now directed to the colonization of the country, one of their first measures may be the establishment of lines of communication, so essentially necessary to the development of its resources.

On the route we passed two or three small rest-houses, usually mere sheds, kept up for the accommodation of travellers. At one of these we halted for half an hour in the middle of the day to rest our horses, and eat some cold rice and fish we carried with us for our midday meal, called by the Japanese "binto."

As the day drew on we approached an extensive lagoon, into which the streams of the district empty themselves, where we saw numbers of wild geese. Passing over rather more fully wooded land, and a little to the northward, we descended a hill and came suddenly on the fishing-station known as Atchi Shibets, distant 9 ri, or 22 English miles, from Hamanaka. This station stands on the south shore of the lagoon, which is said to extend thence into the interior about 2½ miles w.s.w., in its narrow form; but to the south-eastward widens out into a considerable expanse, and communicates with the sea about 3 ri from the station.

Atchi Shibets belongs to the Nemoro district. Its productions are salmon, sea-trout, herring, and seaweed, in considerable quantities. The chief station, or *qnaisho*, is on the north side of the peninsula, and has been selected by the "kaitago," or new colonization officials, as the head-quarters of their eastern district, an officer of the rank of "hangan" residing there as governor, with his staff of officials.

The production of my government travelling-order caused a fresh horse to be forthcoming, and after a delay of a few minutes at Atchi Shibets, which is composed of one large dwelling-house, some store-houses, and a small temple, all quite new, I

embarked with my baggage and horse in a flat-bottomed scow on the lagoon, which some of the boys, assisted by an Aino or two about the place, pulled across to the opposite shore, a distance of about a third of a mile. Landing on swampy low land, my baggage was lashed on the pack saddle, and I mounted with some difficulty on the top of it. A Japanese, who acted as guide, led the way for a couple of miles or so through a thick willow brush, till we emerged on the sea-shore, where he obtained a horse for himself, and we went along on the brier-covered sand-ridges, parallel with the sea, at a brisk pace. Along the shore there are a number of fishing-stations, as far as the River Nisibets, where there is a collection of buildings, it being a very important salmon river; those on the southern side belonging to the Nemoro district, and called Nisibets proper, while the rival establishment on the northern side, belonging to the district of Shibets, is known as Bitszkai. Leaving our horses we crossed the river in a boat, and my baggage was deposited at the chief house of the station, where I dismissed my guide with a small present. This place is but 2 ri from Atchi Shibets, making the distance travelled during the day 11 ri.

I spent the time before dark in strolling about, and looking at the fishing arrangements. Off the mouth of the river a number of Ainos, superintended by one or two Japanese, were hauling in a large seine literally filled with fine salmon. These were transferred to a couple of large boats, which carried them into the river, where, thrown out on a platform or stage on the bank opposite a store-house, a number of Aino women, boys, and men, set to work with knives, gilling, gutting, and cleaning the fish, while others carried them so prepared in baskets on their backs into the store, where they were salted and stacked in rectangular piles, made up of layers head and tail, and alternately crossing one another to ensure stability. The place was surrounded by innumerable crows, keeping up a constant cawing, and ready to dart upon the offal thrown away. Although of considerable length this river is of small size, and is further narrowed at its mouth to 30 yards or less. Being the boundary of two districts it is fished from either side on alternate days. A coarse net is set on stakes completely across, some hundred yards or so above its mouth, which prevents the salmon ascending the river. In rainy weather, however, when the river floods and brings down sticks and refuse, this has to be lifted or it would be washed away, and then the fish get a respite, otherwise they would stand a fair chance of being nearly all slaughtered. Many of the Ainos employed at this river are brought from Sharo and Mombets, on the north-east coast, just for the fishing season,

and return again before winter. The annual catch of salmon is enormous for so small a river. In 1869 the catch amounted to not less than 6300 koku, at 60 fish to the koku, being 378,000 fish, equal to 17,000 piculs, or over one thousand tons. About one hundred bags of salt, of one hundred pounds each, are required for one hundred koku of salmon, including those required to re-salt the fish into the vessel which takes them away. They are exported to Yedo and the east coast of Nipon, as well as to Hakodadi for the West Coast Ports.

The line of the shore at Nisibets River runs N.N.W. and S.E. by S. The farthest part of the Nemoro peninsula visible bears E. by S., and some high land on Kunasiri Island, N.N.E. Nemoro quashio lies across the bay, distant about 13 sea miles to the E.S.E. I should have visited this place, but having a long journey before me, and being unable to calculate how long it was likely to take me, I felt it more prudent to push on and get the better part of the journey over before the setting in of cold weather. As it was, I did not reach Hakodadi too soon, for but a day or two after my arrival, then at the close of November, the most severe winter that has been known for many years set in with unusual severity, and continued, it may be said, steadily for the next four months.

For the sake of easy reference I have appended hereto an itinerary of this journey, showing the distances between the different places, from which it will be seen that the travelling on land occupied 54 days, from which have to be deducted 11 days on which I did not actually travel, which reduces the number to 43, during which I travelled 367 ri, equal to 895½ English miles.

Next morning, after an early breakfast, I left Bitszkai for Shibets quashio, the head-station of the district. I rode one horse on a pack saddle, with a blanket over it, and extemporised stirrups of straw rope; while my attendant Aino guide rode the baggage animal. We followed the coast line to the northward, sometimes by the sand-beach, and at other times on the scrub-bamboo covered land skirting the shore; and we had for the first part very fair travelling. The country rises from the shore with a terrace, from 30 to 60 feet above the sea, and is wooded with moderate-sized hardwoods. We passed some "banya," or fishing-stations, and afterwards a small Aino camp, where some women coming to look out at me, my Aino guide took great delight in doing showman. They seemed gratified to find that my appearance somewhat resembled their own people, and this fact has doubtless a good deal to do with the friendliness on all occasions displayed by the Ainos towards foreigners; but in my case I do not know that I ought to make any distinction, for

during the whole journey I was invariably treated with civility and kindness by Japanese as well as Ainos.

About 9 nautical or geographical miles north of Nisibets River is the peninsula of Notski. It is a low tongue of land, in the form of a hook, jutting about 6 miles to seaward, the portion enclosed by the hook being full of shoals and nowhere deep. There are some fishing-stations on it used during the herring season, and junks which come to this coast for produce make it a shelter from northerly winds. I noticed there were some woods on the outer part of the hook. As we approached Notski we had to cross several rivers, and the shore was in many places of a soft oozy nature, with some lagoons and many swamps extending back into the country. It was well for us the tide was low, or we might have had great difficulty in crossing some of these places; as it was, the water was up to the horses' bellies, and there were frequent mud-holes in which they floundered. I believe that travellers usually prefer going from Bitszkai by water to Notski, and thence along a fair road to Shibets. We saw great numbers of wildfowl, some cranes, and a few white-tailed sea eagles.

On starting again we crossed a large swamp, and then came to the narrow neck by which Notski peninsula joins the main, the north side of which is a steep shingle beach on which break the rollers from the Sea of Okhotsk. Thence we followed a straight shore W.N.W. to a considerable fishing-station where we stayed a few minutes, and then rode on a couple of miles or so to Shibets quashio, where our journey for the day of 9 ri ended. This is a considerable station, situated at the mouth of a good-sized river, called the Shibets. Besides the principal dwelling-house, there are quarters for officials, store-houses, carpenters' sheds, smiths' shops, and other buildings, with a collection of Aino huts adjoining, and deserted barracks, formerly belonging to the Prince of Aidsu, near by. Being a herring district, the Shibets River is noted for its abundance in sea-trout and salmon; although, I believe, the catch of the latter has not been of late years nearly what it was in former times.

The shore to the northward of Shibets becomes high, and fishing-stations exist only about two-thirds of the distance along the coast towards the bold cape of Siretoko; beyond which there is no road along the shore, so that travellers for the north-east coast have to go inland a good distance, the road coming out again on the coast at Share. I was told that the water is very deep off the cape itself even close in shore, and that there is a strong current constantly setting to the eastward. Inland from the cape the country is a mass of high mountains.

A wet morning on the 9th of October found me again en

route in the company of six Ainos and a Japanese, mounted on ponies, following a track through the woods up the valley of the Shibets towards the w.s.w. To each saddle was attached part of our provisions, consisting principally of fine salmon, the tails of which protruded from the ends of the rough packages in which they were made up. The Ainos were a merry lot of fellows, and their spirits being more than usually elevated by an extra dram served out before starting, they kept up a round of jokes among them, and occasionally enlivened the still woods with a song. Being one too many for the number of horses, one was mounted on the croup behind another of his fellows, and notwithstanding the load we jogged along at a smart pace. The pace, in fact, was rather too much for me, for being yet unaccustomed to pack-saddle travelling, and perched on the top of my baggage with my legs hanging down on either side of the horse's neck, the pommel of the saddle right under me, and its cantle against my spine, I was in anything but a comfortable or very safe position; in fact, I felt all the time as if at any moment I was liable to be pitched between the horse's ears, and it was only by clutching the back of the saddle whenever we made anything of a steep descent, and somewhat shifting my position occasionally as I got a chance, that I managed to maintain the indispensable equilibrium, but it was at the expense of a painful cramping of my thighs and some loss of leather. I cannot imagine that Japanese pack-saddle travelling can at any time be an agreeable mode of locomotion; but when you happen (as occurs so very often, unfortunately) to have a rough-paced animal, when your baggage is badly packed or unequally balanced, when the saddle persists in rolling—it is, to say the least of it, exceedingly unpleasant, and I would recommend no one to attempt it for any distance. Before leaving Hakodadi I had an idea of what it might be, and had therefore brought my saddle in the ship with me; but, from information received at Hamanaka, I was led to believe that on some parts of the coast I should be unable to find horses, and, rather than encumber myself with an additional burden when I should have to walk, I decided on not taking it with me. Many a time subsequently did I rue that decision; and therefore, for the benefit of future travellers in Yezo, I would say, by all means take your saddle, and a good pair of boots. Other things can be procured in one way or another, but these are indispensables and are not to be found in the country. "A light heart and a thin pair of breeches," as the saying goes, will not carry you round Yezo—on horseback. Fortunately for my skin, I had not thin, but thick, good, strong, corduroy trousers, which, tucked into a pair of English-made knee-boots, with a flannel shirt, an

Aino cloth coat, a red worsted sash round my waist, an old felt hat, and a loose wrapper to put on in wet weather, completed a costume which, if not picturesque, was both comfortable and serviceable.

The country through which we rode was of a generally level nature, thickly wooded with oak, alder, maple, birch, and elm, and with a heavy undergrowth of scrub-bamboo. We occasionally struck a bend of the Shibets River, which is a deep, quick-running stream. The mountain-land on our right was visible occasionally through openings in the woods. About noon we halted at a small shed, erected as a rest-house for travellers. After dinner we started again, and mounted some terrace-levels of the river valley, still continuing to follow the scarcely visible track through the woods, till about sunset we came to a tenantless house on the right bank of the river, where we halted for the night.

This place, known as Tszarayi-watari, is 7 ri from Shibets quashio, and is a "tomaro doko," or sleeping-house for travellers. Like most other places of the kind, it is fitted up as an ordinary dwelling, and has a small wooden store-house attached, where floor-mats, pots, kettles, some sleeping-quilts, and a small supply of provisions in case of need, are kept for the use of travellers. These houses, as well as the smaller rest-houses, are kept up at the expense of the lessee of the district in which they are situated, but are necessary only where the fishing-stations are so far apart that the distance cannot be travelled in one day, or, as in this instance, where the road leaving the coast strikes into the interior to avoid an impassable shore. On the north-east coast there are more of these rest-houses than in any other part of the country, and as the number of travellers who pass along that coast is but few, it is not usual to keep persons in charge of them, as in other districts, but the keys of the store-houses are carried from the nearest occupied station by authorized persons. We were here joined by an additional Aino, who had come that day from Shibets on foot. He belonged to the same party, who, with the Japanese, had come from Shure only a few days previously in attendance on a Yakonin going to Hakodadi. It was fortunate that I just hit off their return, and so had their company and assistance.

On the 10th the weather was beautifully clear, with a sharp white frost. The first part of the morning we travelled along the river-terraces, in many places clear of woods, in a westerly direction. After that, more to the north-west, over a tolerably level open country, in places crossed by ridges, towards a gap between the range of mountains on the north of Shibets River and another high detached clump to the westward. We

crossed one of the head streams of the Shibets, and came to a halt at a small rest-house just before turning in among the hills. The mountains in this region are only wooded in patches, and the lower country partakes of the same character. I noticed that neither the main river nor the branches of the Shibets indicated, from the appearance of their banks, that they were subject to any great changes in the height of the water. From where we halted the Ainos informed me that a track runs across country to the southward as far as Kusuri, distant about 39 ri, on the principal river of which district there is a large Aino settlement; also that the upper waters of the Nisibets River were only a little distance off to the south; while the principal branch of the Shibets came out of the mountains to the north of us. This part of the country seems to have been overrun by fire. A high brick-coloured peak to the west is one of the mountains seen from Akis Bay; on the Japanese map two large lakes are laid down on the north side of it. The mountains before mentioned to the north of the course of the Shibets, are gathered in a fine picturesque range. There was some snow on the top of a double peak which I took to be highest, and which I believe to be what is called Share Mountain, but a more imposing view is obtained of it from its northern side.

After our midday meal we made about a mile of coasting, and then followed up to the north-west the course of the branch of the Shibets we had crossed in the morning, keeping on a high plateau or river terrace on its left bank through a picturesque region. Subsequently the track descended into the narrow valley, the stream becoming less and less as we ascended, until, when we left it, it was but a small rivulet coming from the northward. We then entered a narrow shallow valley covered with scrub-bamboo, from which we ascended a rise and stood on the watershed, or height of land, between the east and north-east coasts of Yezo, and about halfway between Shibets and Share. Here I first observed heather, which was in a small patch right on the summit, and on which were planted a number of stieks with shavings hanging to them. These were Aino offerings, or, as the Japanese call them, "Kamicama." About the coast they may be frequently seen stuck on points of rock, at the mouths of rivers, and such places.

We now descended a narrow valley, where the prevailing trees were coniferæ of two species, a fir, called by the Japanese "to-do," and stunted spruce—"Yezo matsz"—both of which had much lichen attached to them, and the whole vegetation appeared to indicate a colder if not more humid climate. We followed down this valley, which has a general direction

towards the north-west, but winds considerably; in many places the ground is stony and rocky, and becomes very steep. A small stream then makes its appearance, which is one of the head-waters of the Share. After an hour and a half's travelling we arrived at an open glade in the valley, where stands a good-sized house of the same description as the one we had lodged in the night previous, but somewhat more dilapidated, and likewise tenantless, and we took up our quarters there for the night. The place is called Waka-owi, and is distant from Tszarayi-watari 9 ri according to Japanese account; and I ought not to forget to mention that all along the route we had travelled the distances are marked on wooden posts by the wayside, which is likewise general in all travelling-routes in the country, and the horse hire is reckoned according to these at a fixed rate for distance, regardless of the badness of the roads. I have since learned that at Waka-owi there is a spring, waterfall, or something of the kind to be seen, though I heard nothing of it at the time.

The next day we had a strong southerly wind, a clouded sky, and heavy showers of rain at intervals. In the morning we followed the track down the narrow mountain valley, the hills rising on either side to considerable elevation, and thickly wooded with a mixture of hardwood trees, fir, spruce, and a few yew. The road was but indifferent, sometimes passing through boggy places, where the horses sank deep into the mire, sometimes in the bed of the stream, and at others winding along the steep hillsides, round jutting rocks, and between stumps of trees, so close that the packs not unfrequently touched on both sides at once. The little horses got on remarkably well considering the kind of road, and without more serious accidents than one or two capsizes, in the deeper mud holes, of those horses which carried two Ainos each. Before midday we emerged into a wider valley, wooded with the finest growth of oak, maple, and lime trees that I had seen in the eastern part of Yezo, with mountain-ash and other smaller timber, and a luxuriant growth of mountain-bamboo. The stream had been joined by other affluents, and was now of considerable size. We started a deer, and afterwards came on a whole herd, so I dismounted, and went ahead with my gun, but saw no others, and, shortly after, arriving at a tomoro doko situated on the bank of the river, we halted for dinner. This house is frequently used by travellers on this route as a sleeping-place, being about 5 ri from Share, as the journey, although made by us in three days, can with difficulty be accomplished in that time in spring when the roads are in their worst state.

During the afternoon we travelled down the lower part of

the Share valley, keeping on the left bank of the river, of which we got occasional glimpses, the whole country being thickly wooded. At a couple of ri or so we came to a small halting-place, and thence onward for the next two ri we passed through a most infernal wooded swamp, where the track being mostly corduroyed, or planked, was in such bad repair that our horses floundered and plunged in the mud up to their bellies. To add to our discomfort the sun had come out after the rain, and its warmth had brought out myriads of mosquitoes. We passed another small rest-house in the swamp, and, after one of the worst pieces of travelling it has been my fortune to experience, we at length came to a bridge over a sluggish running branch of the river, passing over which, and riding smartly over some intervening scrub-covered sand ridges, we emerged on the sea-beach. Seldom have I relished anything more than the first sniff of the fine sea-air after getting out of that dismal swamp. A mile or so along the beach to the eastward brought us to a collection of Aino huts near the river mouth, and ferrying ourselves and our horses over in a flat scow as usual we reached the fishing-station of Share.

Share quashio stands on the right or northern bank of the river, where, taking a considerable bend to the south-east, it falls into the sea through a shallow mouth, only allowing the passage of boats. A small temple and some store-houses are placed on a sand ridge immediately above the principal buildings, where are likewise a few Aino huts, but the most of those on that side of the river are at some little distance to the eastward. The sea-shore has a line east and west, and is composed of a soft coarse sand. A few miles on either side the shore bends to the northward, Share being at the bottom of a very open bay. To the east the country and coast are alike high and mountainous, the latter becoming quite steep and rocky towards Cape Siretoko. The vapours can be seen of a volcanic portion of this mass of mountains very near the sea, where there is said to be an extensive bed of pure sulphur, but the chief man at the station informed me that the nature of the coast precluded its being worked. The extreme land visible towards Cape Siretoko bears from the quashio north-east, while a lower coast on the other side is visible as far as north-west. Inland a high double-peaked mountain, appearing detached from the great mass to the eastward, bears south half-east. This is called "Share-no-Yama," or Share Mountain, and, as seen from Share quashio, its appearance is imposing.

I stayed a whole day at Share, resting myself after the fatigue and soreness of the last few days' pack-horse travelling. I took the opportunity to wash some of my clothes in the river,

write up my notes, and collect all the information I could. As to Share itself everything has an old and dilapidated appearance, and I was assured that the station did not pay its expenses, the catch of salmon being only sufficient to keep the people about the place in food. Deer are plentiful in this part of the island during summer, but, as they migrate southward and westward on the approach of cold weather, they are not hunted for the sake of their skins. Bears are tolerably numerous. In winter the whole sea-coast is blocked up with ice.

Before leaving this place I gave all the Ainos and the Japanese who had come through with me small presents of money, and distributed some duck-shot among them, which latter of the two was, probably, the more prized.

III. THE NORTH-EAST COAST.

It was on a clear morning with a slight frost that I left Share for Abasiri. As hitherto, I rode a horse carrying my baggage, a Japanese rode another, and an Aino kept pace on foot. The track follows a sandy beach westward, and then behind grass-covered sand ridges which skirt the shore. The back country is for some extent swamp, and inland of that thickly wooded. We ferried ourselves over a small creek which comes out of a swamp, in a flat scow, fastened to both banks by a rope, near which there are a few Aino huts. Thence we passed between the sea and a lagoon, with another river flowing out of its western end, where there is a fishing-station and some more Aino dwellings. Shortly after we crossed, by a bridge, another outlet of a lagoon, which is deep, and has a considerable run of water out of it, whence the coast trends north-west, with a sandy beach and wooded highland rising abruptly from it. Two small bays occur here, in which are hard slate-coloured boulders and conglomerate rock, where there are some fishing-stations, used during the herring season, and a few Aino huts. This part of the coast is very picturesque; the headlands jut out as far as a north bearing, and the rocky islet off Abasiri Bay—which islet gives its name to the place—stands slightly outside of them. In the bay immediately before reaching Abasiri there is a very peculiar cliff, composed of a grey stone, which, being rent in quadrilateral blocks, has at a distance so much the appearance of basalt, that it requires a near approach to dispel the illusion. It appears to have undergone great heat, and so become thus fractured. Some portions have a pinkish colour, and others, by their greenish-yellow, indicate the presence of sulphur. It is the favourite resort of cormorants and other sea-birds, whose dung whitens much of it.

The track ascends the highland just short of this cliff, zig-zag, and passing over a plateau immediately above the pretty bay of Abasiri, descends by a steep path to the quaisho, situated on the south shore close to the embouchure of a considerable river which flows out of a lake a little inland, not visible from the coast. Looking back from the highland, Share-no-Yama and the mountains towards Cape Siretoko, then powdered near their tops with snow, with the regular sweep of the coast line below and intervening dark mass of wooded country seen through a clear autumn atmosphere, formed a lovely scene.

Abasiri quaisho—distance $9\frac{1}{2}$ ri from Share—is composed of a similar collection of buildings to that found usually at the larger stations; but much credit is due to the lessee (*mada-jin*) of this small district and the “*sihainin*”—an old man who has been upwards of forty years on the coast—for the excellent repair and cleanly state of the place. The dwelling-house had lately been partially rebuilt, and although this is the most distant station from the south of Yezo, I found it furnished with most of the conveniences to be found in the best houses at Hakodadi or Matsumai. The old man took some pride in showing me how, by availing himself of the resources at hand, he had selected the best timber in the neighbourhood for making the neat sliding doors and windows in the prettiest style, the ceilings and panels of beautiful straight-grained “*todo*” perfectly free of knots, the beams and varnished lintels of handsome elm, ash, and chestnut; having been dependent on the south only for the wall and window paper. Before supper I was invited to take a warm bath—a luxury which native travellers never refuse, and which officials demand as a right—which I enjoyed in a nice wash-room, fitted up in the style of a first-class native hotel. I may observe, however, that this was a luxury I seldom resorted to, preferring the clear running stream of some cold mountain torrent to the enervating “*furo*.”

To this district belong about 200 Ainos, who assist in the annual catch of from 500 to 700 *keku* of salmon, besides mass (sea-trout) and herring. The extent of the coast is not more than 10 or 15 ri, which, in one way, is an advantage, as there are but few rest-houses and travellers' sleeping-places to be kept up. The district has always been retained in the hands of the government, over since the greater part of the Yezo coast was taken over from the Prince of Matsumai, on the opening of the port of Hakodadi to foreign commerce.

The “*Kaitago*,” or colonization scheme, commenced last year, however, has altered the arrangement, and a partition of the coast among various daimios is resumed, whose officials are

now taking charge of their respective allotments; but the central government, alive to the productive powers of the different districts, retains as government bashos the best portions. Some of these they intend fishing on their own account, and others they lease to private individuals, from whom they will collect 30 per cent. of the produce for right of fishing; and my own conviction is that the gain to the government will be the greater from the latter. However, it is to be supposed that they know their own business better than others can. As to the daimios, they are hampered by being obliged to settle agriculturists in their districts, the expense of which colonization they are to defray, so that their profits, if any, are likely to be reduced to a minimum. In this, however, the government are only carrying out their present policy—doubtless a wise one—of endeavouring to impoverish these semi-independent princes, and so cripple them against any attempt at defying the power of the central government.

The second day's journey on the north-east coast, of but 6 ri, I made in company with one Aino. The weather was again all that could be desired for travelling—fine and clear, with a light northerly breeze. Getting away tolerably early, we crossed Abasiri River in a flat-bottomed "scow," proceeded along the sand-beach of the bay some distance, then mounted the high-land, the track keeping not far from the shore in a northerly direction through a country wooded with a mixture of hard woods and coniferæ, somewhat broken by deep ravines, and in a few places swampy; the coast being composed of sandstone and conglomerate in cliffs. After a few miles we came down again on the beach, and halted for dinner at a small rest-house near some Aino huts, on the shore of a lagoon only separated from the sea by a narrow sand flat. This lagoon seemed to be of considerable size, running into the country s.s.w.; and beyond it were some high mountains, apparently 20 to 30 miles distant. The coast-line here has a direction about w.n.w. Thence, travelling partly on the high ground and partly on the sand-beach, in places below high shale banks, of which the strata are much inclined, we reached the small fishing-station of Tokoro quite early.

A considerable-sized river, which is a great resort for salmon, finds its way into the sea by a shallow mouth at this place. There were at that time three Japanese and about thirty Ainos employed in fishing; the huts of the latter being situated near the single house which composes this station. I watched them come in from fishing off the mouth of the river, and land, clean, and salt the salmon into the storehouse. Most of the roe was thrown away for want of hands to salt it. I noticed a good

many of the fish to be dark coloured, with long snouts. From Tokoro the coast still runs w.s.w. nearly straight for some distance, and beyond the extreme land about Mombets bears s.w. $\frac{1}{2}$ w. from Tokoro. The head waters of the Tokoro River are near those of the northern branch of the Iskari; and I was told that in former times the Ainos used to pass from one to the other, but they have now no reason to bring them across.

The following morning, continuing my journey with the same Aino guide, about a ri along the sandy, grass-covered ridges brought us to the outlet of the most extensive lagoon on the whole coast, called Saru-ma. Its water is salt, with a rise of tide of about 2 feet; and it contains large oyster beds. At some Aino huts we crossed its eastern end in a flat scow, to a narrow neck of land between it and the sea, the inner side of which the track followed onwards. This sheet of water is about 3 miles wide in most parts, and stretches parallel to the coast about 14 geographical miles. Its south side is skirted by wooded hills, and a confused mass of mountains lie beyond. The neck between it and the sea is partly a bare sand ridge, but a considerable portion is covered with a dense scrub of small oak. About halfway along is a single small rest-house, where we stopped for our midday meal.

A short distance beyond the western extremity of Saru-ma lagoon is the small fishing-station of Yubets, situated in a swampy district on the side of a river which forces its way through a soft sand-beach into the sea, and being obstructed at its mouth by a bar is available only for fishing-boats. The buildings consist of but one frame-house, a go-down, and the Ainos' huts. Round pebbles of black quartz are found in the bed of the river a little distance above its mouth, of which I secured a specimen. The distance from Tokoro is $9\frac{1}{2}$ ri.

The same Abasiri Aino accompanied me the day following to Mombets, an easy journey of but $6\frac{1}{2}$ ri, mostly along the sea-beach, the direction of which for the first part is w.s.w., with a low, swampy country, and some smaller lagoons. We halted for dinner at a dilapidated rest-house, where the high land and wooded hills commence to approach the shore, from which position Mombets Point bears s.w. by s., and the shore-line runs s.w. by w., gradually curving round to the small Bay of Mombets. Shortly before reaching that place we came to a small, but deep stream, with a quicksand at its mouth, across which we first sent an Aino boy, without any clothes on him, to test its depth, and then crossed on horseback, only slightly wetting our baggage, and arrived early in the afternoon at Mombets quai-sho. This station, which is the head-quarters of a district, stands on a sloping point of hard, bluish, secondary rock, which

running into the sea forms a reef, giving some little shelter to the bay, which, however, hardly deserves such a name, as the shore only runs in from the point but a third of a mile or so south-west. This district, under the "Kaitago" arrangement, is under the Prince of Kishiu.

One junk was there at anchor, the skipper of which I found to be a very intelligent man, and he had supplemented his junk experience by two or three passages in foreign vessels, the rapidity of the movements of which, the regularity of the duties on board, together with the advantage possessed by foreign captains of being able to navigate when out of sight of land by celestial observations, he fully appreciated. The "siluminin," or master of the district, likewise was a communicative man, and from these two I derived much information concerning the coast. They told me that in winter the sea was frozen 3 or 4 ri out all along the north-east coast; but the Strait of La Perouse, between Yezo and Krafu (Saghalin) remained open by reason of the force and warmth of the ocean current which passes up the Sea of Japan and through that strait to the Sea of Okhotsk. They accounted for so much ice blocking the north-east coast by its forming on the Krafu shore, and being drifted across by northerly winds prevailing at that season. They described the winter weather as very severe. The two districts of Mombets and Share, which were then worked by one lessee, they assured me did not pay expenses, but were retained only because the same house leased the very profitable district of Shibets, in the Strait of Yezo, and in throwing up one the whole would be lost; the best portion of the coast, and the most favourable place for junks to lie at, namely Abasiri, being in the hands of another lessee. From Mombets to Soya, at the north extremity of the island, is reckoned at 50 ri.

At Mombets I was furnished with fresh horses and an Aino guide, with shaven face and head in Japanese fashion, and having slept there, got away in the rain next morning, the 17th October. Passing over the point, we travelled along a rather uneven coast about N.W., stopping for dinner some 3 ri beyond the quaisho at a small herring-fishing station—uninhabited at this season—situated in a little bay very similar to that at Mombets; before evening reached another deserted station called Sawaki—also in a small bay—picketing the horses outside. The Aino huts near the station were all deserted but one, the people of which brought in firewood for us. On this day's route the beach was mostly sandy, while the shore above the sea-wash was covered with grass and scrub-bamboo. The woods near the sea generally stunted oak, but a mixture of hardwoods on the hills, with some firs visible on the higher

mountains. A few small lagoons and swamps intervene in places between the beach and the hills, while the back country is mountainous. Looking up a valley in a south-westerly direction, I observed a fine high range of mountains. We crossed three rivers with quicksand mouths, at each of which was an Aino hut or two, whose inmates had charge of the flat ferry-boats. There is much driftwood along this shore, and I saw a number of bleached whales' bones.

During the night some deer came down quite close to the house, for we heard their whistling cry very distinctly; but as it rained heavily, and was very dark, it was useless to think of going out to get a shot at them. As I sat over the fire before turning into my blankets for the night, my Aino kept me in constant conversation, being anxious to gain information about foreign countries, which he called "kara;" and being able to write the Japanese "Ratakana" (he was the only one I met who, I discovered, could do so), he put down English names for various things, and spelt them over and over again to himself to get them by heart. This boy accompanied me all the way to Soya, eight days' travel, and during that time worked every night at his vocabulary. He must have had a very retentive memory, for I do not remember that he ever asked the name of the same thing twice, unless it was that there was some indistinctness in the characters he had written, or he wanted to make sure of the pronunciation, which was not to be wondered at, considering that when without his brush and ink he made shift with pieces of charcoal out of the fire to write with. He was so civilized an Aino that at first I doubted whether he was certain as to his parentage; but a peculiar pronunciation, his dark, heavy eyebrows, and the general contour of his features, convinced me he was of pure stock. Although very handy at cooking and attending to one's wants he was not a good traveller—for such he was too far civilized. Much as we may value civilization in the abstract, it must be confessed that under certain circumstances it is at fault.

On October 18th we started with our two horses, and crossing over the point through a thick wood of scrub oak at the back of the "banya" (station) fell again on the sea-shore, which, although somewhat irregular and broken by small points of rock and little bays, with reef off the shore, has a general direction of north-west. The character of the geological structure here differs from the coast to the eastward, hard primary rock showing both *in situ* and in boulders. It rained heavily, with a strong north east wind, and some sleet fell, so that I found the travelling indifferent. We crossed one river in a scow as usual, resting during a heavy shower in an Aino hut near the river.

The rivers we crossed subsequently were minor streams, but much swollen by the rains, so that the fords were deep. My horse fell once this day, sending me flying over its head with my gun in my hand, but owing to my carrying it detached—my usual practice—it fortunately sustained no injury, while I had become so accustomed to such mishaps that I thought little of it. This same horse was an exceedingly awkward brute, and at an unoccupied herring-station we passed he got up against one of the buildings and defied my efforts to move him from it, until I dismounted and belaboured him with a stout stick. I noticed—though it was seldom I could get a view for the rain—that the higher mountains had become partly covered with snow. Fir-trees were more numerous near the coast than hitherto, while on some of the hills inland they were quite thick. The lagoon region, which extends from Share along this coast, was now passed, and the occurrence of many rapid rivulets indicated a comparatively short distance back to the watershed. The native map of Yezo places the upper waters of the Teshiu River, which falls into the Sea of Japan a little south of Risiri Island, but a few miles distant from this coast.

I reached Horonai, distant 6 ri from Sawaki, wet, cold, and hungry. This is the most northerly station of the Mombets district. It is properly a salmon-fishing "banya," but the "ban-nin" (fishermen) and the Ainos had been withdrawn for the more profitable Shibets district. The establishment is but small, and we found only one or two Ainos about the place. A small river enters the sea just west of the station. From this place a distant headland is visible, bearing N.W., which is the high land beyond Yesase; and an islet called Chuskiu, lying about a mile off the coast and 3 or 4 miles in the same direction, can likewise be seen. On the native map of Yezo—to which I have before several times referred—this small island is laid down 3 miles off the land, which discrepancy is only another instance of the little dependence which can be placed on that map as a coast chart, however valuable it may prove in any other way.

The following day, the 19th, we started tolerably early, crossing the river at the station in a scow; we travelled along an irregular and picturesque coast in a general direction of N.W. by N., a distance of 6 ri, to the small untenanted station of Chikatomushi. The land rises towards the hills by small plateaus or terraces, which, scooped in low cliffs along the shore, expose rock, or else clay and gravel beds. A little stratified rock is to be seen, but as you approach Chikatomushi, granite and other hard primary rocks prevail. Scrub oak here gives way to woods of beech, alder, maple, &c., mixed with "todo," or silver

fir. During this day we passed several creeks; but one in particular, where we stayed at a small rest-shed for dinner, was actually alive with salmon. They were most of them foul dark-coloured fish.

We came to the station early, but the horses seemed pretty well done up. As there was still a warm sun, I hung out my blankets to air and allow the fleas to jump out of them. There are quantities of echinæ, and some univulve and bivalve shells along this part of the coast. I saw no fresh-water ducks, but a good many harlequin and other salt-water species, cormorants, white-tailed sea-eagles, sandpipers, thrushes, and, of course, crows and gulls.

Looking back from Chikatomushi, Mombets high land appears like a point on a S.E. by S. bearing. Forward, the bold shore beyond Yesase bears N.N.W., which is the general run of the coast line. A high mountain, then covered with snow, lies inland, to the N.W.

I was awakened on the 20th with the unwelcome intelligence that our horses were missing, which the Aino accounted for by their having broken their tethers for fear of a bear, which he contended must have paid us a visit during the night. I was, however, of the different opinion that his carelessness in securing them, and probably in giving them no water the evening previous, had been the cause of their breaking away. The Aino followed their back tracks some distance along the beach, but returned, reporting that they seemed to have made for home. Knowing we were not far from an inhabited station, I did not feel at all concerned, and having breakfasted, we started on foot; an Aino girl, who was travelling in the same direction, making little of carrying most of my baggage, while my Aino tied my red blanket and wrapper on his back, and I carried my fowling-piece and ammunition. Our pack-saddles and provisions we left at the house. We followed the shore in a general N.N.W. direction, and as the beach was mostly hard sand the walking was very good. We crossed a small river in a canoe, which we found at its bank, and shortly after reached some Aino huts, where the woman was relieved by a lad, who undertook to carry my baggage.

At the Aino huts we stayed a little and had a smoke. The people were very civil, and offered me food, which I declined. Observing a fine sea-eagle at a little distance, they asked me to shoot it, but before I could approach within fair range it flew off: so, rather than they should doubt the power of my double gun, I knocked down a kite as it flew over us, at the sight of which they were greatly delighted. My Aino was a stranger to these people, so on meeting, before exchanging a word, he went

through a ceremonious form of salutation individually with each of the principal men. This they performed by going down on their knees, holding out their hands with the palms together, rubbed them backward and forward twice; the saluted party following the motions of the saluting one; then raised both hands to a level with the chin, palms uppermost, lowered them, raised them again, stroking the beard, lowered them, and performed the last operation over again, which completed the ceremony.

Some distance after leaving these Ainos we crossed over a point and came in view of Yesase, a tolerable-sized station belonging to the Soya district, situated on the north side of a shallow—as to indent—bay. A river, which is quite deep near its mouth, falls into the sea at the southern end of the long sand-bench, the valley of which runs into the country in a westerly direction. The hills are clothed with a mixture of hardwoods and fir; and the former, being just then in their full fall colours, formed a contrast which was strikingly beautiful. Besides, the weather being all that could be desired, I enjoyed the walk very much. It is but 5 ri ($12\frac{1}{2}$ miles) from Chikato-mushi to Yesase, where we arrived about noon. I found but one junk in the bay, anchored right off the station. The people at the station numbered 4 Japanese and 30 Ainos. They say that the sea is blocked with ice for some miles out during winter.

As the nights were getting cold, I used a Japanese quilt over my blankets, besides one below me—a plan which, as the weather continued cold on the remainder of this journey, I henceforth adopted. Japanese houses are ill-adapted for a cold climate, being mere shells—a wooden framing closed in with half-inch boards full of rents and splits—not the least protection against cold. The floors are likewise very imperfectly laid, but in an inhabited dwelling this inconvenience is obviated by the use of thick floor-mats. It may seem strange, but nowhere have I observed the Japanese in Yezo to have adopted a style of dwelling suited to the climate.

I found a young Hakodadi yakonin stationed at Yesase, the second only at that time on the whole coast from Share to Soya. He said he knew me very well, but I failed to recognise him. He was very civil, and we had a long chat together. He had been in charge of Soya when H.M.S. *Rattler* was wrecked in the autumn of 1868, and gave me some particulars of the accident. His opinion was, that the vessel ought never to have been run so close on shore, even supposing entire ignorance of the existence of reefs—a judgment which, after inspection of the locality, I believe can hardly be gainsayed. Along this coast, even before

reaching Yesase, I saw fragments of oak timber with copper bolts sticking in them, among the driftwood, which, doubtless belonging to that unfortunate vessel, had been driven thence by the strong current which sets through the Strait of La Perouse.

Luckily, there were a few horses belonging to Yesase, of which the man in charge supplied me with two, at the usual government price, and my Aino having gone back to our last sleeping-place and fetched the pack-saddles and provisions, I started again with him next morning (21st October) *en route* for Soya. A heavy gale had come on during the night from the eastward, and continued all day, hauling to the south-eastward. We travelled along a rocky coast, with high, wooded mountains rising immediately from it, the track leading at times along the beach, and at others on the first terrace above it, to avoid the most rocky parts of the shore. The beach was thickly strewn with shells, the most common kind being a sort of broad mussel, and another an ordinary fan-shaped bivalve. I imagined—with what approach to the truth I am uncertain—that these shells belonged to animals inhabiting the warm water of the Kuro-Siwo ocean-stream, one branch of which passes through La Perouse Strait into the Sea of Okhotsk, where, possibly the temperature becoming too cold for them, the inmates of the shells died, and the shells were cast up on this shore.

The north-east coast of Yezo has a length of about 200 geographical or nautical miles, between Capes Siretoko and Soya, and, with the exception of between 30 and 40 miles running south-westerly to Share Bay, may be said to have a general direction of north-west. Its prominent features are, a high mountainous region near Cape Siretoko; a low shore skirted with numerous lagoons and swamps; a high bluff, near Yesase; and thence towards Soya a comparatively low fir-wooded country. There is a total want of harbours, and a somewhat inhospitable climate, though in the latter particular it would probably compare favourably with the more northern portion of the north-west coast. Though it will probably be that portion of Yezo the last to be brought under cultivation, I should imagine that its fishing resources might be rendered more available by the opening of inland communication with the southern part of the island, which would encourage settlements.

IV.—SOYA AND THE NORTH.

Leaving the mountainous land south and east of Shonai behind, we travelled, on the 23rd October, along a straight sand-beach to the N.N.W., the country inland being low, with distant hills only. After passing a lagoon with much grass swamp

around it, where there are a few Aino huts, the country becomes covered with a dense spruce forest, the trees on the outer edge near the beach being stunted and bent over by the force of the wind. This is a kind of vegetation seen in but few localities of any extent on this island, but extends here for a considerable distance, and as it occurs on the north-west coast, in the vicinity of Teshiu River, I imagine it may extend right across from sea to sea.

By evening we reached a river coming through a lagoon, and bending along the beach to the northward, but the mouth had become completely blocked up with sand by the late gale, an effect often produced where the beach is of a shifting sand or shingle. Here are some Aino huts and a large house kept up as a "tomaro-doko," where we found a Japanese and an Aino who had come from a station farther to the north. We travelled this day, without making a halt, a distance of 10 ri. The place is called by the Aino name of Sarobets.

The following day we reach Soya, 13 ri distant. For the first 2 ri the coast was in the same line (s.w.), and the country of the same description as the day previous. The land, however, began to rise before we reached a blunt point, bare of trees, with some rock cropping out. A cluster of rocks lies about a mile out at sea, north of the north-west part of this point. From this the land falls in, and before reaching a high headland, there are two bays with a fishing-station in each, and some small rivers emptying into them. Near the first of these stations the land is high and somewhat broken, and is wooded principally with spruce mixed with hardwood trees, which, then showing their brown and deep-crimson autumn colours, had a very beautiful appearance. We then passed along under high banks and cliffs of sandstone in thin layers, with beds of clay and marl, the beach being rocky and stony, and bad for horse travelling.

At the cape, which is shelving, the woods do not approach the shore, but the land is covered with scrub-bamboo, except a few patches of heather on some of the slopes. Flat ledges of rock appear to extend far off shore, rendering the near approach of vessels to this cape dangerous. Just at the cape there is a nice little boat bay, where are a few Aino huts. I rounded the north point of Yezo in a sleet storm, on October 24th, and a cold westerly gale met me right in the teeth. Thence I followed the shore south-westerly to the quai-sho, where I was glad to find a good wood-fire to warm myself at.

As a station, Soya is one of the most considerable on the coast, though the establishment is kept up more for the accommodation of government travellers to and from Krasnoyarsk (Saghalien)

than for its fisheries. The quaisho is a collection of various buildings, including dwelling-houses, officials' residence, store-houses, a temple, boat sheds, &c. The land around is broken and hilly, with an absence of woods. There is an opening in the reefs, which are about half a mile from the shore, which admits of the entrance of junks and small vessels into a little harbour, having from 10 to 15 feet of water. Owing to the heavy sea running outside I was enabled to get a good view of the situations of the reefs, which I roughly sketched, and compared with information received from the master of the place. The weather precluded my going in a boat to take soundings as I had intended. An old battery, made when Yezo belonged to the Prince of Matsunai, stands above the quaisho; there are no guns in it now. There are some Aino huts about the place. Potatoes, dygoons, or large turnip radish, and leeks are grown in small quantities.

I remained at Soya during the 25th October for the purpose of inspecting the guns, stores, and material saved from the wreck of H.M.S. *Rattler*, lost in September, 1868, which I had the orders of the Japanese government to do. I found a house which had been occupied by Captain Stevenson and the officers of that ill-fated ship, with a flagstaff erected in front of it, and the royal arms and other devices from the vessel stuck on the gate posts. The stores and material, consisting of rope, blocks, wire rigging, boarding pikes, cutlasses, revolvers, chairs, tables, a fire-engine, smith's forgo and tools, cooking utensils, crockery, lanterns, compasses, salt provisions, biscuit, shot and shell, flags, sails, a turning lathe, sponges and rammers, and some books, in two houses and a shed covered with sails, were all as they had been left when the officers and crew were taken away by the French corvette *Dupleix*. The door and windows were nailed up, which had been done by the yakonins who took charge at that time, and until I arrived not a thing had been moved; consequently, what with the snow, rain, damp, and warm weather of the summer, most of the sails and many other perishable articles were more or less damaged. Some spars, five anchors, a quantity of chain cable, with five of the ship's boats were outside, partly covered with thatched roofs. What guns had been saved were ranged up in two lines on their carriages. A portion of the stern of the *Rattler* was fast on the reef to the south of the entrance into the small harbour, and the whole shore was still strewn with fragments of the wreck. Many of the things were moved and distributed under my superintendence, and I left word with the two officials then at Soya how to dispose of the remainder; the whole of these stores having been presented to the Japanese government by orders from England.

Some large-sized sailing boats are kept at Soya for passengers crossing the straits. These boats carry a crew of ten men each, so that when the wind fails they are able to use sculls, which they carry. The distance to Siranosi, where they land on Krafu, is reckoned 18 ri.

Soya was one of the places selected by the Japanese government as the head-quarters of a district under the Kaitago scheme; and the steamship *Thales* landed some officials and settlers shortly after I was there. The chief officer left his post for Yedo (a warmer climate) during last winter, and I believe the settlement has been moved to Yesase, a more favourable locality for agricultural operations.

From Hamanaka (Akis), whence I started on this land-journey to Soya, I had travelled 131 ri, taking fifteen days, with two days' stoppage on the road.

Having completed my business at Soya I was ready to turn southwards. I felt it was none too early, for the weather was getting cold, and my limited stock of baggage included little clothing suitable for cold weather. I, therefore, set out on the 26th in company with a Japanese and an Aino. During the early part of the day we passed along the east and south shores of Soya Bay, halting at a fishing-station on a river 4 ri from Soya. Here, intending to take my compass out of a small bag slung over my shoulders, where I always kept it, I found it to be missing. Suspecting that I had mislaid it at Soya, I drew, from recollection, a plan showing the paths and buildings at the quai-sho, describing to the Japanese who had come with me where I imagined I had left it. I made, likewise, a drawing of the compass, and he immediately volunteered to start back to look for it, while the Aino and I continued our route. I never saw this Japanese afterwards; but on the morning of the third day after he left me, an Aino messenger brought me a packet containing my compass. I should have been quite lost without it.

Following the sand-beach, which was fine level good travelling, we came to another fishing-station, where a number of Ainians who were collected there took great delight in looking at me. At this place the horses, about 20 in number, belonging to Soya quai-sho, are kept, as there is plenty of grass suitable for hay, while they say that about the quai-sho the feed is very poor. Hills approach the south-west corner of Soya Bay, and towards Cape Nossyab the land is all high. The forests are a mixture of fir and hardwoods. Here we left the bay, and turned up a valley towards the south-west, where we had some experience of plank and corduroy roads not in the best of repair. Mounting the hills by a fair-cut horse-path, we

travelled along plateau-like land till we came suddenly to the brink of a steep high bank immediately above the Sea of Japan, where a fine panoramic view lay spread out before us. The lateness of the season had turned the oak-leaves a deep rich brown, the birch yellow, and the mountain ash the brightest lake colour, which, with the berries of the last a rich scarlet, and some of the grasses a violet hue, made up such a mixture of colours, and so beautifully distributed, that an artist would have been at a loss to exaggerate them. As I gazed on this scene, recollections of similar views in the more northern regions of America came fresh to my memory, but I believe I can say with truth I had never seen anything to excel the fall colours of Northern Yezo.

There is, curiously enough, a pond of water just on the edge of the brow. The track from this zigzags down the steep slope, crosses the low interval, and then takes the beach. There are a few fishing-huts at this point, and some stations to the northward towards Cape Nossyab. The island of Risiri, with its fine conical snow-covered peak, some 6000 feet high, has an imposing appearance from this coast, and the lower island of Rihnsiri is also plainly visible.

Travelling along a flat sand-beach to the south-westward we reached the fishing-station of Bakai, about an hour and a half before sunset. The men in charge of the station came out some distance to meet me, and everything seemed prepared. I believe the yakonins at Soya had sent word the day previous that I should be going this way, as is the custom when any official of rank is travelling. There is a very peculiar rock standing on a hummock just underneath the hill at the back of the station. Besides a great deal of driftwood I noticed along the shore fragments of what must have been an enormous crab. Such crustacea are not uncommon in the Sea of Japan, for I have myself seen them over 6 feet across the extended legs. The salmon season was just concluded when I was at Bakai. Distance from Soya $8\frac{1}{2}$ ri.

On the 27th I had a long cold day's journey of 13 ri to Teshiu, a strong north-west wind blowing off the sea with snow and sleet showers. The whole distance was along a dreary straight coast having a flat sand-beach strewn with driftwood. The uplands stretch a little south of Bakai, and thence the whole back country is low and covered with a dense fir forest, leaving an interval of about a quarter of a mile of grass and scrub-bamboo covered land near the beach. At 6 ri from Bakai there stands a single house, kept up for the accommodation of travellers. Otherwise, save a couple of small rest-

sheds, there is not a building, nor even an Aino hut, or the slightest sign of civilization along this inhospitable coast.

About sunset we reached the river at Teshin. It is a considerable stream, running parallel with the beach for some distance before making its way through a sand spit into the sea; and on the south side of its mouth there is a long narrow lagoon, or old channel, also connected with the river. We left our horses and crossed in a canoe. A walk of a mile or so over a swamp, and by a narrow path through the woods, carried us to the station, which stands opposite the mouth of the river. This is the most northern station of another district, Bakai being the most southern one belonging to Soya. The Japanese tell me that this was one of the best salmon rivers on Yezo, and that its mouth allowed of the passage of good-sized junks, but now it is almost blocked up, and but few salmon are taken. Sea-trout, however, run in this river in considerable numbers. They say that there is abundance of large "todo" (fir) and "Yezo matsz" (spruce) on this river, and that it can be navigated for a long distance up in boats. According to the native map of the island, its head waters come from very near Mombets on the north-east coast.

I slept at Teshin, and next morning an Aino guide and two fresh horses were ready for me. The travelling in the first part of the day had much of the dreariness of the day previous, the country inland being low and swampy, with an unbroken shore strewn with driftwood. At 4 ri distance we came to Wimbets River, a stream of considerable size, where there is a rest-house with an Aino hut alongside of it. Here we crossed the stream in a scow, and struck again on the beach. Before getting much south of the Wimbets the country rises, and the shore is skirted by a straight line of yellow clay rock cliffs, some 200 to 250 feet high, topped with clay and gravel beds. There are few gullies to break this natural wall, which extends for many miles. The track passes sometimes along the top, and sometimes on the beach below. We reached an old fishing-station called Furibets (8 ri from Teshin), which is situated where a small river breaks through the cliffs. The river is spanned by a substantial wooden bridge, the first I had met with on this journey.

By the time I was up next morning an Aino had arrived, bringing my compass, which I had forgotten at Soya, which enabled me to resume the few observations of the line of the coast, and bearings of distant mountains, &c., which I made as I travelled along. With the same horses and guide I travelled in a general s.s.w. direction along the coast, which is composed

of the same unbroken line of cliffs as before mentioned. The track is mostly along the shore, but in some places, its being impassable from the sea washing right up against the cliffs, one is forced to pass along the top of the heights. There are a few insignificant creeks, and two rivers, which we crossed by ferries, Ainos attending at each. At the northern river of the two there is a rest-house where we stopped. Otherwise there are no dwellings along this coast, though I noticed the remains of some abandoned herring-stations. In fact the whole coast from Tomamai northwards towards Soya is a most inhospitable region, and little good even for fishing.

Tomamai, where I stayed on the night of October 29th, is distant $37\frac{1}{2}$ ri from Soya, and 8 ri from Furibets. It is at a blunt point—if it may be so called—where this almost straight coast alters from a s.s.w. to a south direction, but the form of the land is not at all like its delineation on foreign charts. The high land rises steeply from a narrow level strip along the sea, where stands a quaisho, and a number of houses round about, in fact there is quite a settlement, and it may be considered the northern limits of civilization on the west side of Yezo. The people appear thriving, and cultivate some small gardens about their houses. Many of them return to their homes in the south during the winter season.

The two islands of Yangisiri are plainly visible from Tomamai. They are moderately low. I understand that only one is permanently settled. Maski mountains to the southward are in view, and Risiri peak. I took the following bearings from Tomamai quaisho :—

Extreme of Maski Headland	} S.W. by S. $\frac{1}{2}$ S.
(Cape Ofuwi)	
Yangisiri Islands	W. by N. to N.W.
Risiri	N. by W. $\frac{1}{2}$ W.
Coast line forward	South.

When I speak of having arrived at the northern limit of civilization, I mean to say that the west and north-west coast of Yezo, as far as Tomamai, in about latitude $44^{\circ} 18' \text{N.}$, is more or less settled by a fishing population, a portion of which is permanent, and a part migratory. The same kind of migratory fishing is carried on, to some extent, on the south-east coast, but not nearly on such a scale. The farthest limit in that direction is Taromai, in the Yubuts district, about 60 miles north-east of Hakodadi, beyond which, along the whole east, north-east, and north, and as far down the north-west coast as Tomamai, the produce has hitherto been entirely taken by the lessees; there being no private individuals doing any business in those dis-

tricts. I imagine the reason that the tide of civilization has flowed up the west coast, rather than elsewhere, has been because of Matsumai, in former times, having been the chief place and nucleus of civilization, if it may be so called, on Yezo. The west coast is, doubtless, the most prolific in the riches of the sea. The amount of herrings alone caught in spring and early summer on that coast is something enormous, and the facility with which the produce of the fisheries can be transported to the consuming districts on the west coast of Nipon, gives a stimulus to fishing enterprise, and provides employment for many thousands of people.

That the transient portion of this population is of little benefit to the country there is no doubt, and it is, consequently, one of the objects aimed at by the present government in carrying out their colonization or Kaitago scheme for Yezo, to permanently settle their people on the coast, at the same time that they plant agricultural settlements in certain favoured districts inland.

V.—THE NORTH-WEST COAST.

It was on the morning of October 30th, that I started from the quaisho at Tomamai to continue my journey southwards. There was a sharp frost, and the weather continued clear and nearly calm all day, while the travelling was good. The track to Ruromopi, which is a distance of 11 ri, follows the coast almost due south. Near the sea the country is covered with grass and scrub-bamboo, but the hills inland are wooded. Some creeks, and two considerable rivers, flow out on this coast. The first, about a couple of miles south of Tomamai, is crossed by a flying bridge, composed of a flat-bottomed scow, and a rope stretched across the river. In the valley, on the north bank of this river, about half a mile back from the sea, are a number of deserted buildings, formerly barracks belonging to the Prince Shonai. Obiraspi River, a stream of considerable size, falls into the sea about 5 miles north of Ruromopi. In its valley coal has been found, of which I was shown samples. Although of bright appearance, it seems, judging from a trial of a very small piece, not to be of a very inflammable nature; besides, its distance from the sea, 10 ri (24½ miles), and the impossibility of running boats on the river, precludes this coal being of any value at the present time.

A straggling settlement may be said to extend nearly all along the coast between Tomamai and Ruromopi, there being few breaks in the line of houses, huts, store-houses, and boat-sheds, which line the beach. When I passed, it not being the

herring season, most of the houses were closed up. At Oniska, halfway on the road, there were two junks lying at anchor a good distance off the shore.

At Tomamai I had made the acquaintance of a yakonin, who, with his wife and family was travelling towards Soya. He had made a start some days before, but had had his wife and baggage wetted, and nearly washed away, below the cliffs north of Tomamai, which had forced him to return. He intended starting again the morning I left; but, with no such travelling encumbrances as he had, I was on horseback and away before he had gathered his impedimenta together. This day I also met a couple more officers travelling northwards on horseback, whom I discerned at a long distance by the rays of the sun reflected from their bright lacquered travelling hats. Several kirai, or retainers, were with them. They civilly stopped and spoke to me, asking me to inform their friends—whom I was acquainted with—at Hakodadi that I had met them. On the route along the north-east coast to Soya, I had not met any travellers, as that coast is little frequented; but, being now on the direct northern road for Krasno, I frequently afterwards met persons travelling whom I found invariably civil, and glad to make my acquaintance; and although there were few among them whom I could recognise, my seven years' residence at Hakodadi had been sufficient to make me known to most of them.

In approaching Ruromopi from the northward, the high mass of the Maski Mountains is seen to advantage. At the time I was there they were topped with snow. A high mountain, called "Shakotan," belonging to the high district lying westward of Yoitchi and the bay of Iskari, was likewise distinctly visible during this day's ride, when it must have been about 70 geographical miles distant. Ruromopi is a considerable settlement, standing in a little bay open to the north-west, into which a narrow, but deep, river falls by a crooked mouth. In 1869, this was the head station of Siwara, whose basho extended northwards as far as Teshiu River. The bearings by compass from Ruromopi are:—

Highest part of Maski Mountains in line with the coast, s.s.w.

Maski headland (Cape Ofuwi), with Shakotan in line, s.w. by w.

Yangisiri Islands, n.n.w.

Risiri Islands, n. by w.

North coast-line towards Oniska, n. by E.

Ruromopi River Valley, s.e.

The river at Ruromopi is spanned by a strong, but not very symmetrical bridge.

Obtaining horses, I rode on Sunday morning, the 31st October, along an inhabited coast between Ruromopi and Maski, a distance of 5 ri, crossing a couple of rivers. There are two or three little bays. The bench is stony, and houses and boat-sheds line the shore, many of the inhabitants having small patches of gardens. This district was in the hands of a Matsumai house known as Datŭ, and was likewise the government head-quarters for the whole coast from Huma-maski to Soyn. The four yakonins stationed there paid me a visit, and asked my opinion on the Obiraspi coal.

Inquiring about the route forwards to Hama-maski, I learnt that there was already a depth of two feet of snow on the mountain-passes, making the horse-travelling bad, and that, as the distance was 10 ri, it could not be accomplished in less than a whole day, so that to go that way would have necessitated my staying at Maski till the following morning; I preferred therefore to take a boat along the coast, as the weather was remarkably fine, and had all appearance of continuing so. By the time my midday meal was over, a small boat was ready with three men, into which my baggage, food for the men and myself, and a brazier of charcoal were put, and we pushed off from the shore, I sitting in the bottom of the boat between two of the oarsmen. After a little we were favoured by a slight breeze and set sail.

The shore for a mile or two to the westward of Maski is comparatively low, but after this the coast becomes precipitous, the mountains rising right up from the sea, with few breaks that are more than gullies, and this extends to and beyond Cape Ofiwi, which is the northernmost point of the Maski promontory, if it can be so called. It is to escape this impassable coast that the road strikes up inland at a short distance after leaving Maski, and passing over the high mountain-land descends again to the coast a little north of Hama-maski.

Passing along the high rocky coast, where the mountains above the cliffs were wooded with the usual (in this latitude) mixture of firs and hardwoods, we made a general south-westerly course till sunset, when we rounded a very precipitous part where the shore turns more to the southward; and thence continuing on till long after dark, we entered a little bay, and put ashore at a single house inhabited by one family. The place is called Yuwawi, is about 4 ri from Hama-maski, and is used during the herring season as a fishing-station of the lessee of the district. This is one of the few places along this rugged coast where houses could be built, and the other localities have mostly been taken possession of as fishing-stations.

In passing along near the shore we saw a few people in skiffs

opening fish and awabi with long poles, with which they can reach the bottom in five or six fathoms.

In the morning we put off again in the skiff: the sky was clouded with some showers of rain, but the day turned out fine. The coast runs s.w. by s. as far as Cape Ofuwi, after which it turns south. The scenery is remarkably grand. ‡ Just on the north side of Cape Ofuwi is a splendid lofty vertical cliff of bright red sandstone. At places there are some small cascades, and at others great clefts, caves, and detached pinnacles of those picturesque forms peculiar to conglomerate and sandstone rocks. There are likewise some sulphur springs.

Hann-maski is prettily situated about halfway between Capes Ofuwi and Buyimnwas. There is a considerable river coming down the valley just south of the quaisho, where there was an agricultural settlement of Shonai people, which was deserted during the war which ensued on the deposition of the last Tycoon. They say that the Iskari can be reached by following up this valley. About 300 Ainos belong to this district. I was told by the fishermen that there were plenty of cuttle-fish on this coast, numbers frequently getting into the herring-nets in the spring; but little is done in catching them, as the fishermen have a superstition that people who go out for the purpose never return.

We reached Hama-maski, distant 4 ri from our previous night's sleeping-place, before noon; when, finding there were no horses to be had, and that, in fact, the land road was seldom resorted to, I was compelled to take another boat. This time I was furnished at the quaisho with one Japanese and two Ainos, and resumed my journey immediately after dinner. The yakonin stationed at this place paid me a visit. A sandy beach runs some distance south of the quaisho, where there are some fishing-stations: then the shore becomes bold and rocky, and about Cape Buyimnwas lofty and precipitous, with some remarkably fine cliff scenery. Rounding the Cape the coast continues high and rocky, trending about south-east. We sailed a part of the way, passing some small fishing-stations, and at night came to a halt at a little cove at the mouth of a small valley running up between the high mountains north-eastward, with a mountain stream in it. The place is called Gokibiru, and is the division between Hama-maski and Achita-bashos. It is called 9 ri from the former quaisho, and an equal distance from Oshirokotsz by water, and 5 ri by land, but the mountain-path for the first 3 ri is said to be very rough. There are but a couple of houses at Gokibiru, one on either side of the little stream, kept only for the accommodation of government travellers. We put up at that on the north-west side, as it belonged

to the Hama-maski district, but travellers going northwards would be accommodated at the other. The people were remarkably civil. I saw some fine potatoes, squashes, and dygoons, which had been grown on the place, and I was assured most vegetables did very well in any favoured situations on this coast. I have heard that the Shonai settlers at Hama-maski managed to raise rice, which, however, must be a very precarious crop so far north.

In the morning I proceeded for about 3 ri in the boat along the coast, which for the first part was high and precipitous, but farther on the mountains became lower and their slope less steep. We then put ashore at a small river, where there is a settlement, and a considerable valley running inland, which seemed a very favoured locality. At a little distance up, the river is spanned by a well-made bridge in one arch. The shore-line thence curves round more to the southward, with a table-land abutting on it in clay and shale cliffs. I walked about a ri along the beach, the two Ainos carrying my baggage and reached the "injoya" head station of a district, almost synonymous with "quaisho"), called Oshirokotsz, soon after noon, where I took dinner, and ordered horses to take me on to Iskari.

After dinner a couple of horses and a guide were ready, and I started to complete the 4 remaining ri to Iskari. For some distance we travelled along a deep sand-beach under high banks, till, coming to a valley, we crossed two small streams by bridges; thence followed the track which ascends grass-covered highlands, and runs along the edge of the cliff, till it descends in a zigzag to the shore again. From these heights one gets, in coming from the northward, the first view of the extensive level wooded valley of the Iskari, stretching for many miles without a break as far as a fine range of mountains which forms its southern limit, while a long straight line of low sand-beach bounds it on the west,—a break in which shows the mouth of the Iskari River. To the eastward some very distant hills are visible, but looking south-east no termination to the valley can be seen, as in that direction flat land extends between Iskari Bay and the Pacific, the mountainous island of Yezo being at this point quite cut through by this stretch of low alluvial country. The extent of this flat is some 40 geographical miles by a width of from 15 to 20.

There is a small river falling into the sea just where the last northern highland abuts on the valley of the Iskari, and thence a straight sand-beach of about 4 or 5 miles takes you to the mouth of the Iskari. The land in from the immediate shore is wooded with scrub oak, but the timber becomes larger farther back. We came to the ferry over the river about a quarter of a mile above the sea, near the oyaksho or govern-

ment establishment. I recognised an officer whom I had been acquainted with at Hakodadi, who invited me into his house and sent my baggage to the "Honjin," or government hotel. It was late when I left him, crossed the river, and reached my quarters for the night.

VI.—ISKARI AND OTARUNAI.

The mouth of the Iskari, having a northerly opening, is somewhat askew with the shore of the bay, which is in a line north-east and south-west. The next reach, above, the river runs parallel with the coast, and the town is situated on its left or western bank between it and the sea, leaving an unoccupied flat sand point strewn with drift-timber immediately at its mouth. The deep channel follows the bank along the town, where junks moor five abreast, with gangway planks laid ashore from the inside ones, where there is 50 to 75 feet of water. Above the town the river bends, and a long reach comes from the south-east. Its width opposite the town is about 300 yards with a sluggish current. The "bar" is a little outside the mouth, the channel over which is said to be rather crooked and variable, while the depth of water likewise varies according to the season from 7 to 12 feet. When I was there late in autumn there was between 9 and 10 feet, allowing of the passage of the largest junks which trade to Yezo; but later in the season the prevalence of north-westerly gales and reduced currents of the river cause the bar to silt up, it remaining shallow all winter till it clears again with the spring floods caused by the melting of the snow in the interior in April.

There are some large houses and substantial godowns at Iskari, but a great part of the place is made up of temporary buildings occupied only during the salmon season, when, besides the people actually engaged in fishing, a number of small traders and others resort thither, which, together with the presence of the junks—there were 57 sail in the river when I was there—give the place during that time quite a busy appearance. The resident population in 1869, according to the government records, was 350 Japanese and 430 Ainos, but in autumn the former was raised to 800, besides the crews of the junks amounting to some 600 more men.

The salmon fishery, which is the great resource of Iskari, is carried on both inside and outside the river by seine-nets, which system is pursued at various stations up the river for a distance of 15 to 20 miles, portions of which are let out by the government to about 30 fishing-masters, while the government retains for its own use certain parts where they employ Ainos under

superintendence by Japanese. The average catch of salmon on the Iskari (exclusive of the fish taken near its sources) is 20,000 koku or 1,200,000 fish, equivalent to 50,000 piculs or 3000 tons, but in some seasons considerably above this. The best fishing is about the mouth of the river, where 2000 fish are frequently taken at one haul, and outside in the sea sometimes as many as 16,000 are taken at once. The season of 1869 was a very indifferent one, so that the junks, representing about 30,000 koku, would probably be not above half loaded. The fish are mostly not clean and silvery, but much discoloured, especially those caught up the river; they are, however, considered by the Japanese sweeter eating than the red-fleshed clean-run fish, but do not keep so well. By the junks they are carried to various ports on the west coast of Nipon, few coming into the Hakodadi markets, as that place is supplied mostly from the east coasts. The greatest obstacle to the salmon fishing on the Iskari are the numerous "snags" and driftwood in the river, which greatly interfere with hauling the nets.

The boats used in the salmon fishery are large "sampa" for running the nets, and small "tsippa" (skiffs) or "kawafune" (canoes) for other purposes. A "sampa," which is the usual form of large fishing-boat used round the whole coast of Yezo, and, I believe, not found in the south of Japan at all, is about 50 feet in length by a breadth of 10 feet. Built with very great shear, high prow, and curved stem, they are good to ride in a sea, and easily hauled out stern foremost on the beach. Each boat carries a crew of about 20 men, 16 of whom ply short oars on the fore parts; the skipper stands on a raised platform at the stem, guiding the boat with a large steering-oar, two or three others attend to paying out the net, which is carried amidships; and when on the look-out for fish, as for shoals of herring, one stands right in the bow, leaning on the high prow, which is probably designed for that purpose. One hundred and fifty piculs (8 to 10 tons) is a fair load for one of these boats when carrying cargo. Japanese fishermen every year make long voyages in these large boats, when going to and returning from the more distant fishing-districts, when they are built up with weather-boards, bamboo, and matting, and carry a mast and sail. They have also on board rollers, small capstans and gear for hauling out on the beach, which they are frequently forced to do when caught by bad weather on a coast where there is no shelter. These "sampa" are certainly well adapted for the use they are put to.

The smaller boats used on the coast are the ordinary improved Aino "tsippa," which the Japanese have adopted, having a flat solid bottom, plank sides, and square stern; but

in rivers the Aiwo "dug-out" canoes are more generally used. These are long narrow craft, shaped out of a single tree, usually elm, and hollowed out tolerably thin. Bow and stern both overhang slightly. On the Iskari there are great numbers of them, where they are used for almost all purposes of river navigation. The one in which I subsequently ascended this river was about 35 feet in length, with a breadth of 2 ft. 9 in. They are paddled by one, two, three, or more persons, with narrow-bladed paddles, usually about 6 ft. in length, which are likewise used for poling in shallow water. Some Ainos use longer paddles. In paddling or poling they stand up, except when taking it easily in going down stream, when they frequently sit or kneel in the bottom of the canoe. The Ainos, like other savages, are very dexterous in the management of their canoes.

During the fishing season the allowance to the Ainos is one quarter of a sho of rice, an equal amount of saki, and fish. At other seasons, when they work for the government, they get the same allowance of saki, and double of rice in lieu of fish. On going into the woods to hunt, certain advances are made them, and they settle up at the close of the season, on bringing in their furs and skins.

Firewood can be obtained in any quantity, oak and elm being mostly used for that purpose. A great deal is carried across the bay to Otarunai. The whole valley of the Iskari is covered with hardwood timber, but this is not generally used by the Japanese for house building, they preferring fir ("todo"), which is cut on the tributary streams, and rafted down in May and June. It is obtained of large sizes, but, as usual, the Japanese cut it nearly all into lengths of 2 fathoms. I saw some 600 or 700 logs, from a foot to two feet square, lying on the east side of the river at Iskari, and there was a quantity more on the town side.

The road, or rather "track," from Iskari to Otarunai, follows the shore of the bay for the first 10 miles along the level grass-covered sand ridge, a few feet above the sea. The woods which approach the shore are mostly oak of a stunted nature. There are but one or two houses, and but few fishing-huts, along this shore, which curves gradually round till it meets the highlands skirting the south side of the bay, where there is a collection of houses called Zenibako, and thence houses line the shore more or less thickly all the way to Otarunai. The highlands bordering the sea are backed by mountains, which rise to considerable elevation. There are few ravines reaching to the sea-shore, and but two valleys, one of which, about halfway between Zenibako and Otarunai, has a fine clear mountain river coming down it, while the other is but a little east of Otarunai. The distance between Zenibako and Otarunai is called 4 ri, and the

direction is W.N.W. The road runs below the slopes of the hills and cliffs, and is stony and bad. There are some very picturesque cliffs: one, which projects into the sea near a rocky islet called "Binten," has a tunnel cut through the solid rock for some yards, which allows of a person on horseback passing through. Before reaching Otarunai, you have to pass over a high hill, to avoid a precipitous point, which forms the eastern side of Otarunai Bay.

The first occasion that I was at Otarunai was on the 3rd of November, having travelled that day from Iskari (9 ri) on horseback. Notwithstanding that I had heard it much spoken of by Japanese, I was struck with the place, not only for the picturesque nature of the locality, but with the many advantages it seems to hold out as a place of settlement and a port of trade. The land, while being hilly and diversified, has a sufficiency of level ground for building purposes, and fine slopes available for cultivation, while the hills and mountains afford pasture for horses and cattle, and an ample supply of wood. As an anchorage, the bay is capacious and well sheltered, with good bottom. The advantage of a good harbour,—in fact, the only one on the north-west coast of Yezo; the value of the productive fisheries on this part of the coast; the rich agricultural valley of the Iskari, for which it is the seaport; and the excellent locality of the place for an extensive settlement, will, I believe, cause Otarunai to become a large place, second on the island only to Hakodadi. In 1869 the resident population of Otarunai and Takasima, which had hitherto been separate townships, was 3500 persons, which number in the fishing-season is increased to 6000.

The great resource of Otarunai hitherto has been its herring fishery, the most productive on the whole coast of Yezo.

I put up at Otarunai at the regular official stopping-place, or "quaisho," where I found several officers already quartered, and during the evening the people who had come by the *Osaca* disembarked and filled the whole establishment. The captain of the *Osaca*, hearing of my being there, sent his chief officer on shore to offer me a passage to Hakodadi, but I declined with thanks, as I was forced to go to Iwanai, and, in fact, did not wish anyhow to return just then, especially by sea—a mode of travelling I would at all times avoid, if possible.

On the 4th of November I travelled from Otarunai to Yoitchi, a distance of only 6 ri, but there was so much rain that the roads were very slippery, and it took me the principal part of a day. On returning by this road subsequently, I made the same distance easily in half the time. After passing a number of Aino huts and some settlers' houses, you descend

and come suddenly on a beautiful cove with a neatly kept "injoya" standing at the head of it. This is called Oshoro, and is distant 5 ri from Otarunai.

I stayed at Oshoro long enough to partly dry my wet socks and clothes, and then continued, about 1 ri more, to Yoitehi.

In travelling between Otarunai and Yoitehi it is not necessary to pass close to Oshoro quaisho, there being a track in a valley behind that place which can be followed, by which one hill—that just west of the injoya—is escaped, and you strike the other road on the village.

The Yoitehi River comes out of the mountains from the direction of Iwanai, the road to that place passing partly up its valley, but leaving it to the east. According to the map of Yezo, confirmed by information I gained on the spot, it has a long course, its head waters coming from near the sources of some of the southern branches of the Iskari. The village of Yoitehi is a little to the westward of the quaisho, where a level bench lined with houses and fishing-huts curves round, meeting the high land of the cape on the north side of the bay. There were two yakonins stationed at Yoitehi, one of whom was very communicative and civil, and had quite a sumptuous repast prepared for me in the evening.

Having walked a good part of the distance this day, and been well wet through, I slept soundly this night. In the morning one very poor horse was produced, which wretched animal was intended to carry my baggage and myself across the mountains to Iwanai on the west coast, the distance to which is reckoned at 14 ri. I left the guide to pack the luggage, and started on foot. There was some snow and sleet falling. I passed through part of the village of Yoitehi, and thence followed a muddy road up the valley of a small river. Passing over a bridge of hills, we descended a small valley which led into the larger valley of the Yoitehi River.

There is a single house where the road falls into the main valley, and one or two more are passed before coming to a place called Skarobets. This is in reality the name of a tributary stream ("bets" in Aino signifying river) which falls in on the left bank of the Yoitehi River. It is $3\frac{1}{2}$ ri distant from the sea. There are two houses, one on either side of the Skarobets, which is crossed by a wooden bridge, which are houses of accommodation for travellers, and are of good size.

The road beyond Skarobets continues up the valley, crossing several small streams, and, while ascending gradually, leaves the main river to the south-eastward. In some places there is very bad travelling, over corduroy and ruts, but not so deep in mud as the lower part of the valley. Rubispi is the name of a

"tomaro-doko," composed of a couple of houses, some godowns and outbuildings, distant 6 ri from Yoitchi. This place is at a considerable elevation above the sea. A small stream runs past it, and the height of land that is passed over on the way towards Iwanai is immediately above, to the south-west.

In the Yoitchi valley a great deal of charcoal is made, and, there being timber in abundance, firewood is cut and run down the river to the sea. The scrub-bamboo, which is the principal undergrowth of these woods, grows very luxuriantly, much of it being 6 ft. to 7 ft. in height, so that as you pass along the track your view is very much confined. The forest trees are mostly hardwoods of considerable size on the lower grounds, the conifers being confined to the upper mountains.

I noticed at different places on this river people spearing salmon. There are two kinds of spear in use in the country: one is the ordinary four-pronged "graino;" the other the Aino "gaff," with which the fish is struck in the same way as with the spear, but, by an ingenious contrivance, when the weight of the fish comes on it, the hook reverses itself, and acts as an ordinary fishing gaff, so that there is no danger of the fish getting off, as there is with the other spear, when the water is deep. The Ainos are very expert at spearing salmon, which they pursue sometimes by torchlight.

I found but one family at Rubispi in charge of the place, which is kept up at the expense of the lessee of the Yoitchi district. A great quantity of rain fell during the night, and the morning looked anything but inviting for a journey. Added to this, my guide reported the horse in a bad state. When it was brought to the door of the house for packing, and I saw the poor brute shaking with cold, I decided not to attempt to ride, but, giving the guide instructions in the event of the horse giving in, to hire, if possible, man or beast to carry my baggage to Iwanai, I started ahead on foot. Expecting to have to walk all day, and being encumbered with my wrapper as a protection against the snow, I gave my fowling-piece, which was in a strong seal-skin cover, to be fastened on the pack with the baggage, having previously removed the caps and covered the nipples under the hammer. Hitherto I had invariably carried my gun myself, on the chance of meeting with game, and always loaded ready for action. It was unfortunate, as it happened, that I neglected to do so this day.

The first couple of miles was an up-hill pull to the top of the pass; thence the track leads down a valley, crossing and re-crossing a mountain torrent. The mountains are clothed with thick forests of fir and a mixture of hardwoods. The stream and valley have a steep fall till it becomes wider, when

there is a house or two. Continuing downwards, the track leaves the stream on the left hand and follows a valley with much soft ground and deep mud-holes. I stayed for a short time at a house, expecting my guide and horse to come up with me, but, as they did not appear, I went on again in the thick snow. Soon after this I struck the main stream of the Horogap Rivor, which falls into the sea some 3 miles north of Iwanai. The path keeps on its right bank till it crosses it at a ford, where there is a small skiff used for a flying bridge. About here are some houses, and clearings under cultivation.

It was in this part of the road that I met with somewhat of an adventure. I was trudging along in the track where there was high bamboo brush on either side, when, as I turned a bend, I came suddenly in view of three bears, an old one and two cubs, in the path, about 20 yards distant. They did not seem at all scared, so I shouted and waved my arms and flaps of my wrapper, which caused the old one to mount on her hind legs and take a better look at me. How at that moment I wished for my gun, with a brace of bullets! I could not advance, and to retreat would have been ridiculous, as my horse and gun might be miles behind, not having seen them since morning. So I waited till the three bears left the road open, which they did, after a few minutes, quite leisurely, by entering the thick brush. Just as they did so, however, attracted, I presume, by my shouting, another big bear, which I took to be the male, came rustling through the bamboo scrub on my left-hand, and halted within 10 paces, where he stood looking at me. I attempted the same method of trying to frighten him off as I had done with the others, but he seemed quite indifferent to the sound of the human voice or my gestures. Not relishing his presence in quite so close proximity, I looked for a stone, but there was not one on the path; so I took up a handful of half-dried mud and threw it at the brute. This seemed to convince him that I was in earnest, or perhaps having sufficiently satisfied his curiosity, he deliberately walked off.

After the bear adventure I followed on the track to Iwanai, which, though in the Horogap valley, is a considerable distance to the left of that river, and passes over an undulating country with a soil of black earth. My guide caught me up about a ri and a half short of Iwanai, where we stopped. Thence, after crossing a small valley, the track strikes westward over an open grass-covered country towards the sea, with high ranges of mountains on either hand and the fine peak of Sirebets in the distance to the south-east. On the extremity of a sort of plateau one comes suddenly on the village of Iwanai with its spit-protected little bay.

I had walked this day 20 miles over one of the worst roads—if such tracks deserve the name—in the country, in bad weather, and at, I suppose, about the worst season for travelling. It being too late to go on that evening, I put up at the injoya for the night, and next morning a ride of a couple of hours or so took me to the coal-mines at Kaiyanoma, which was my present destination.

VII.—IWANAI COAL MINES.

About 80 miles in a direct line north of Hakodadi, on the west side of Yezo, and a few miles northward of an enormous cliff known as Raiten (but erroneously placed on foreign charts of the present day), is the fishing-village of Iwanai, which gives its name to the district of coast, or basho. The village is but a poor place. The situation in winter is bleak in the extreme, as it seldom happens during that inclement season that there is any cessation to the north-westerly winds which blow square in off the sea. A s.w. by w. bearing touches the shore at Raiten and the two capes Benki and Mota beyond, which are all in one line. Just north of the first of these, Otatsuts lies in a deep bay, from which place the road to Hakodadi strikes inland across country to Oshamanibi, on Volcano Bay.

Bearing due north, 5 sea miles from Iwanai, the little village of Kaiyanoma stands at the opening of a narrow valley running into the mountains to the eastward. Here are situated the government coal-mines, first discovered, I believe, in 1863, by "O-sima," a Nambu officer then in the service of the Tycoon, who had been under instruction by two American mining engineers, who were employed for a period in Yezo, in 1862, by the government. H.M.S. *Rattler* gave the position of Kaiyanoma as latitude $43^{\circ} 5' N.$, and longitude $141^{\circ} 30' E.$ The bearings from the village are:—

Coast line	.. .. .	N. by W. and S. by E.
Rocky point beyond Tomari	..	S.W. by N.
Iwanai	.. .. .	S.
Cape Raiten	.. .. .	S.W. by S.
Sitsz Bay	.. .. .	S.W.
Cape Benki	.. .. .	S.W. $\frac{1}{2}$ W.
„ Mota	.. .. .	S.W. by W.

Mr. E. H. M. Gower, with his brother—then H.M. Consul at Hakodadi—visited the place in 1866, and recommended the re-opening of the mines. Mr. Gower was subsequently appointed superintending engineer, and under his direction was commenced a tramroad from the mines to the sea. This work was interfered

with by the civil war, but in the autumn of 1869 Mr. James Scott was sent up by the government to complete the works, which he had just accomplished when I arrived there, and had the gratification of seeing the first coal run down the tramway; in fact, I may say, the opening of the first rail-road in Japan.

Kaiyanoma Valley has an average width of from 300 to 500 yards, with grass-covered slopes on either side. It runs about three-quarters of a mile east, when it bends north-east, and the hillsides become higher and wooded with a mixture of firs and hardwoods. Some smaller valleys and ravines branch off the main one, and the coal now being worked lies in a patch of mountain between one of these running east and the north-east part of the main valley, about a mile and three-quarters from the sea. The Japanese originally worked on the north-west side of the mountain from the main valley, but in order to save another bridge which would have had to be made across the small river which runs down the valley, the mine opened under the direction of Mr. E. H. M. Gower is near the top of the mountain on its south-west side, and the tramway runs up the branch valley, or ravine, as it may be called. The main gallery follows a seam of coal $7\frac{1}{2}$ feet in thickness, running S.N.E., and dipping not less than 45° W.N.W. The gallery is 8 feet wide by 10 feet high, and had, when I was there, penetrated between 50 and 60 yards. A smaller gallery had been run off it to strike a $3\frac{1}{2}$ feet seam. It was intended in the main one, into which trucks can be run, to work laterally both upwards and downwards, but this has not yet been done to any extent, and I think will only be carried on upwards, as the labour of pumping and hauling up the coal from the down workings, would be better expended in opening another gallery in the same seam lower down the mountain. At the mouth of the mine is a level terrace, which has been formed by cutting out and filling up, on which a shed has been erected, where coal which cannot be at once run down—as in the winter when the snow is deep—is deposited.

The staff on the place, when I was there, was three yakonins—who however did little or nothing—and 43 men, including carpenters, smiths, foremen, coolies, and 19 miners. Mr. Scott controlled the works, and everything seemed to be going on smoothly under his direction. An absence of trees renders the place bleak, and exposed to the full force of westerly winds which blow up the valley. Carpenters' shed, smithy, and engineers' shop, stand alongside the line near its lower end. Some of the workmen likewise live there, but the miners are located in

dwellings near the head of the main tramway, where they are conveniently situated for work on the mine.

The tramway runs right to the seaside at the village, where the coal was being deposited in a heap; but it was intended to erect sheds there. The bay at Kaiyanoma is but a diminutive one, having a shingle beach, and ledges of rock on either side. In westerly winds there is no shelter whatever, so that the only kind of boats which can be used for shipping coal are such as can be readily hauled out in case of bad weather. For this the ordinary large fishing "sampa," previously described, are very suitable. It would necessitate great expense to construct a wharf to withstand the force of the sea, while a breakwater would be a work of considerable magnitude. Coal might be shipped in sailing vessels from April to September, while steamers might take their chance of fine weather at any time, but this is very uncertain after October.

That Iwanai coal will come into general use in the north of Japan for steam purposes I have no doubt, as, with proper management, it will be able to be supplied either at Hakodadi or the mine, in large quantity, and at a cheaper rate than any other coal. Besides, it is superior in quality to most other Japanese kinds, while it competes favourably with Saghalin coal, not being nearly so liable to break up as the latter. It is a fine clean coal, of bright appearance when first mined, but becoming readily tarnished on exposure to the atmosphere and rain. Easily ignited, it burns freely with a whitish smoke, and retains a red heat a long time. It would be called by engineers a rather "quick" coal. The ash is free from clinker. It has been favourably reported on by H.M.S. *Salamis* and *Rattler*, and has been frequently used by Japanese steamers; but as yet no large amount has found its way to Hakodadi.

By the time I reached Iwanai coal-mines I had travelled 236 ri. I stayed there five days, and then recrossed the mountains to Yoitchi the way I had come; thence to Otarunai and Iskari. The roads were in quite as bad a state, if not worse—were such possible—than when I had passed before. It took me three days to reach Iskari, a distance of 31½ ri. Snow fell every day.

On the way I fell in with "Shima Hangan," a governor appointed under the new Kaitago arrangement for the Iskari province, who with a large retinue was on his way to take charge of his district. He was travelling in grand state, and everywhere along the route there were preparations made for him. In crossing the mountains between Iwanai and Yoitchi he had no less than 17 horses and 160 coolies.

Every night at this time—the middle of November—there was a sharp frost; the trees were quite bare of leaves, and already snow covered all the higher grounds—such evident signs of winter, that I was glad when one of the governor's staff arrived at Iskari, where I had waited three days for him. He had left his chief at Zenibako, and gone thence by land to a place called Satsporo, distant 7 ri, by a bad path. He told me they had decided to make the seat of government between Satsporo and Hasabo, although these arrangements are probably now changed, as a new governor has charge of the province, who has established his head-quarters at Otarunai, and I believe intends to confine operations in the Iskari valley to agricultural settlements. This officer said the Governor wished me to go back to Zenibako, and accompany him to Satsporo; but, urging the lateness of the season, I declined, promising that if I could make it convenient I would come up again the next summer. I consequently ordered a canoe to be ready in the morning to ascend the Iskari.

VIII.—THE ISKARI RIVER.

A little before noon on the 19th November I stepped into a canoe which lay ready alongside the bank of the river at Iskari. It was manned by three Ainos, and a young Japanese was in charge of the provisions, &c. Having taken off my boots I made myself snug in the bottom of the canoe, which was laid with clean mats, using my blankets for a covering, and the baggage piled behind supported my back. There was a small brazier containing a charcoal fire, which Japanese carry with them on all occasions when possible, more for lighting their pipes from than for anything else, although they have usually a small teapot with it. The Japanese laid himself down in the bottom of the boat covered with his spare clothes and sleeping-quilts, and as the weather was cold, with more or less snow, he seldom showed himself after we first started.

Each Aino handled a long paddle, with which they poled the boat along in shoal water near the bank, or paddled when the bottom could not be reached. In this way we made fair progress, crossing and recrossing the river, so as to keep the convex banks and round the points where the water was shallow and the current least rapid. We passed a number of fishing-stations, at many of which Ainos were working, superintended by Japanese, and at others Japanese alone.

The Ainos, by direction of the Japanese, made a framework of vine branches over the middle of the canoe, which they covered

with straw mats, so as to protect him and myself from the snow, although I had no desire to have any covering.

Having started so late in the forenoon from Iskari, we were able to make but 4 ri before evening, when we put ashore at a small station on the left bank, between the mouths of two tributary streams, known as the Hasabo and Satsporo. This place is known as Satsporo Bito, and the only dwellings were Aino huts, one of which was occupied by a couple of Japanese, who had charge of the fishing carried on by the Ainos.

The Hasabo River is quite small, but the Satsporo, they told me, is navigable for "sampa" boats about a ri up. It is in this region that it is intended by the government to form agricultural settlements, and, from what I could learn, the country and soil are well suited for such purpose. That this region is capable of producing wheat, oats, barley, maize, buckwheat, millet, hemp, peas, beans, onions, turnips, beet, cabbage, potatoes, tobacco, and other vegetables and fruits of a temperate climate, I think there can be no doubt, for the soil seems remarkably rich, and the climate is certainly suitable for the growth of all the productions of the northern part of Nipon, except rice; and it seems a pity that the country has so long lain waste.

As we were passing a place this day where a number of Ainos were hauling a salmon-net, a young fellow waded out in the water and threw a salmon into our canoe. Asking the reason of this, I was told that he knew me in Hakodadi; and regarding him more particularly, I recognised him as one of seven Ainos whom I had prevailed upon to come to my house, where they were photographed by Mr. Sutton, chief engineer of H.M.S. *Serpent*, a very excellent photographer, in July, 1867. Curiously enough, that same evening an old Aino, who had been another of the number, brought me a present of some fresh venison and a couple of salmon. I learnt that he was chief of the Satsporo Ainos, about 500 in number. The Japanese who accompanied me had brought some saki on his own account, for trading with on the river, and I therefore got him to serve out a liberal allowance, which I presented to the old man, "with a short speech." He went through the usual form of throwing a few drops to the four winds, presented me and the Japanese in charge of the station with some in a formal manner, and then retired.

During the night there came on a heavy gale from N. and N.W., with strong frost, and the wind kept up all the day following, with a great fall of snow, not by any means pleasant for boat travelling.

The wind being favourable, in many of the reaches as we ascended the river, the Ainos extemporised a sail out of a grass mat tied to a stick supported by one of the paddles held up by

one of them, under which the canoe flew along at a rapid rate. In bends of the river when the wind was "scant" the Ainos paddled or poled. Our day's work was as far as Tszi-iskari, a distance of 6 ri.

As Tszi-iskari is approached, the country bordering the river is in some places higher than on its lower course, and there appear to be considerable tracts of grass-covered land clear of forest. Some portions, too, have been overrun by fire, and the station itself I learnt had been burnt down only a year previous by a fire from the woods. This place is situated on the left bank of the main river, about 15 feet above the water at that season, close below the mouth of a tributary stream which comes from the south-westward, and is, I believe, called the Tszi-iskari. I was told that Satsporo could be reached by ascending this river, and on the map of Yezo it is shewn taking its rise in the neighbourhood of Siribets Mountain. Another small tributary falls into the main river slightly above Tszi-iskari, on the right bank, and 2 miles higher up is the junction of the two great branches of the Iskari, which by reference to the map will be seen to drain a much larger extent of country than any other river on the island. The northern branch has much the longest course, some of its waters being drawn from 44° lat. north, and its course cannot be less than 180 geographical miles above the junction, which would make its total length over 200 miles. The northern branch probably discharges considerably more water than the southern one, for the main river just below its junction is about 200 yards wide, while the south branch is only from 30 to 50. This latter draws its waters principally from three large lakes, the southernmost one near to Turoimai Volcano, and a great extent of swampy country in that district.

Japanese have told me that a number of Ainos live on the north branch of the Iskari, there being a large settlement of these people some five days' travelling up it, and another five days above that. I met a Japanese who had been seven days up (say about 50 miles), where he described a great fall, so that the canoe has to be unloaded and hauled up light by a rope, the baggage being carried overland to above the fall.

We put up for the night at Tszi-iskari, which is 25 miles from the sea, and early in the morning I roused all hands, so that we might get away betimes, having 10 ri to do this day. There were some heavy snow squalls in the morning, but the day turned out suashiny and warm, and the evening clear and frosty. A short distance above Tszi-iskari I observed a few small stones on the bank, the first I had seen on the river, but after this no more the whole day. As we entered the south branch, the Ainos

belonging to another canoe, which was keeping company with us, and our own men got out on the bank, cut some sticks, which they stuck up on an open space, and getting some saki from the Japanese, went through a ceremonial, as a propitiation for good luck on the voyage.

We added another to our crew this day. He was an Aino whom we met descending the river by himself in a small canoe, who hauled his craft out on the bank and came with us. He was a fine, tall, well-made man, and seemed a very good hand with the paddle, taking his station in the bow.

Soon after starting again we came to another fork of the river, and took the southern branch. The eastern one comes out of a lake of considerable size near at hand. Both streams were of nearly equal size, about from 20 to 30 yards across, and apparently deep. Having made up their minds under promise of saki to reach the Isaributo that evening, the Ainos worked well; but they had a good day's labour.

Isaributo is a large and well-found station, with a number of godowns and Aino huts around. It is kept up for the salmon fishery, and for collecting deer-skins and horns, and belongs to the Yubuts south-east coast district.

A small, short steamer, with good power, might get up the Iskari as far as this place, but might have some difficulty at the sharp turns of the Isaributo branch. She could anyhow get as far as the forks below Shimamap, say 15 ri (about 37 miles) from Iskari, and possibly into the lake near that place. The depth of water would be no impediment anywhere. In the event of settlements on this river, a small steamer would be found very useful.

The morning of November 22 was fine, clear, and frosty, and the snow crackled under my feet as I walked down to the river to the canoe. We followed the river up to a lake. All the smaller creeks and little bays were completely frozen over. Around the lake is a low and swampy country; the only rise at all being a distant low range of wooded hills seen to the north-east, having apparently a north-west and south-east line.

On this route you do not pass through the body of the lake; but, leaving it on the left-hand, enter one of several very shallow mouths of the clear water Sitosi-kawa (river), which it is difficult even to get a canoe into. The distance from Isaributo to the lake is called 3 ri, and thence up the Sitosi-kawa to the quai^{sho} which takes its name from the river, 2 more.

As our Ainos were resting for a few minutes on the bank of the river another canoe passed us, and went ahead. By the time we came up to them again they had got a stag, which they had taken in the river, where it had been driven by some Aino

dogs, and was kept at bay. There must be numbers of deer throughout this district. We likewise saw many geese, a great many swans, and some cranes, as well as ducks, about the lake, and flying over continually.

The water of the Sitosi-kawa is beautifully clear, and in great contrast to the Iskari and its tributaries. The quaisho is situated on its right bank, where there is a good bridge over the river. It is a large and well-found station, composed of a number of buildings. Large numbers of salmon are caught at and about this station.

I intended to have stayed for a day or so at this place for deer shooting, but the man in charge of the station assured me that there were too many Ainos and dogs about the quaisho, so that I had better go on about 3 ri on the road to Yubuts, where there was a charcoal-making establishment that I could put up at for the night, if I wanted to have any sport. I therefore started with an Aino guide and two horses. We travelled along a broad road over a dry level country, covered with small oak and birch scrub, with an entire absence of underbrush. The snow was hard and crisp, and as I found riding rather cold work I dismounted, and went ahead on foot, allowing an Aino girl, who was going the same way as ourselves, to ride on top of my baggage. There has been some labour expended on this road, it being in some places carried on level causeways over small hollows. After some distance we entered a forest of thick hardwoods, skirting the left side of a deep valley, where one of the sources of the Yubuts takes its rise, and soon came in sight of deer. As one troop crossed the road in front of us, a fine stag stopped and looked at me, some 70 yards distance. My shet-gun was loaded with ball; I hit him full in the forehead, and he dropped like a stone. The Aino, the girl, and I, set to work at once, skinned and cut up the deer. Another old "minoko" (Aino woman) came up and got what meat we did not care to carry away, and it was dark before we had it packed on the horse and started on. The road then descended into the Valley of the Yubuts, at the head of the navigation (for boats) of which there is a wooden store-house standing. A little further on we came to the charcoal station called Uvinai, 3 ri from Sitosi-kawa, where I put up for the night.

In the morning I took the guide, and started with the intention of deer-shooting. We saw numerous herds of deer, but any attempt to approach them in such weather was useless. I cannot say they were shy, for they allowed us to approach within two or three hundred yards; but as I had but a fowling-piece I could not pretend to do anything at such a range. When they are alarmed they make a kind of whistling cry, and then

start off. The Ainos can imitate a call note they have tolerably perfectly, which often induces the deer to stop and listen after they are started, and so gives a fine opportunity for a shot. After going over a great deal of ground we made a curve round, struck the road, and returned to the charcoal station.

The number of deer in this section of the country during the autumn and winter must be enormous. They are said to come from the mountainous country to the westward and northward, and from the lower Iskari Valley, probably to reach a district where the cold north-west winter winds are not so severely felt.

After noon I started for the coast. Passing along the wooded valley of the river, at about a ri I came to where the road forks. That to the left passes along the edge of the high land, and the other over swampy ground on the margin of a lake. The ground being hard frozen, I took the latter, and saw numbers of swans on the lake. The soil is of a volcanic nature.

The buildings of Yubuts quaisho and its high outlook are visible a long distance before you reach them across a wide extent of meadow, which stretches from the sea inland. The quaisho stands right on the seashore where the river, taking a turn, runs for some distance parallel with the beach, before emptying into the sea by a narrow mouth. The mountains north of Hakodadi are visible on a south-west bearing, and the peak of Romanotaki can be seen a little more to the westward. On the other side land can be distinguished as far on the south-east and distant mountains lie to the east and north-east.

In 1869, Yubuts was the chief station of the district, embracing Sarn to the eastward and Taromai to the west, and extending inland to the stations on the upper waters of the Iskari. The principal produce is salmon, inashikass, and oil, deer-skins and horns.

The distance between Yubuts on the south-east coast of Yezo, and Iskari on the north-west, by the ordinary land and water route is in all 32 ri.

By reaching Yubuts I completed 300 ri of my journey in Yezo, and had been just six weeks since I landed at the eastern end of the island.

IX.—VOLCANO BAY.

An easterly wind, bringing some rain, on the morning of the 24th of November, did not delay my start from Yubuts; but, mounting a tolerable horse, on a native manufactured saddle of foreign pattern, lent me by the head man of the station, and attended by a Japanese and an Aino, I set off with my face to the

westward to return to Hakodadi. Had it not been that there was business which necessitated my return to Hakodadi, I would have gladly extended the journey much farther.

Following along the line of shore, which, as has been already noted, takes a westerly direction, and keeping on the level turf a little back from the beach, we rapidly neared the picturesque volcano of Taromai. This mountain, the Japanese say, was in eruption 160 and 300 years ago. The country is for some distance quite flat, with a great deal of swamp, but some fine grazing land, through which a few streams flow and find their way into the sea after usually skirting the shore for a distance. The soil is volcanic sand and gravel, which it may be said to be more or less all the way to Edomo (Endermo) harbour and beyond.

Taromai is the end of the Yubutsu district, and beyond this there are few fishing-huts till Sirawi is reached, which is a very poor quai-sho, situated on the east side of a river flowing through a wide valley coming down from the mountains, which there approach the coast.

The good travelling having allowed me to reach Sirawi early, I decided to go on, and, changing horses and reverting to a pack saddle, I started with another Japanese and an Aino. To the w.s.w. of Taromai volcano is a fine group of mountains, cut by deep valleys.

After going on long after dark we came to a single house, 3½ ri from Sirawi, called Aiyiro, where I thought it advisable to stop for the night. There was only a woman at this house, the men belonging there being all employed fishing. She was, however, very civil, gave us all the accommodation she could, and we cooked a good supper of venison, the produce of my gun, which I had carried with me.

I was up by daylight next morning, when the Aino went out to look up the horses; they were not, however, to be found, having been probably insecurely picketed out, and broken loose in the night, and gone back to their station. There is always the chance of such an occurrence when you stop overnight at a place to which the horses do not belong, as the people are very careless in securing them. The Aino, therefore, went back for them, while the Japanese and myself, leaving the baggage, started to walk 3½ ri to the next station, called Porobetsu.

At Porobetsu I obtained a horse and another guide. The travelling onwards is for some distance along the same level tract, but the highlands become more distant from the shore, which is terminated by a bold headland. Thence to Edomo harbour the country is of a very broken nature, being a succession of hills wooded with oak, and intervening valleys. Although a fine and well-sheltered harbour, the country is of such a nature

all round it, that unless there were any attraction on the peninsula itself Edomo would be useless. It is well that in selecting a treaty port this place was discarded in favour of Hakodadi.

The road continues up and down oak-wooded hills till it reaches the beach, where are a few houses and an earthen redoubt, with some cedar-trees planted round it, that in former times was garrisoned by a few troops of the Prince of Nambu. Then, following the stony shore about west, and crossing some more hills, you come suddenly above a little bay, with two valleys running down to it, on the shore of which is situated the village of Mororau.

Mororau gains some importance as being the place whence regular passage boats ply to Sawara, a village on the south side of the bay, at the foot of Romanotaki, a route taken by most travellers from Hakodadi to the east coast, the passage of a few hours saving two or three days' travelling round the bay by land. The distance across is about 20 miles, whence by land to Hakodadi is 34, making 54, against 114 by the land route. One of these passage boats had started a little before I reached Mororau, but she was forced to put back that evening, and the passengers, who were mostly officials, came ashore and stayed at the quaisho where I had taken up my quarters. Besides these, I made the acquaintance of some officials who belonged to the place.

There were at Mororau some small batteries still in existence which had been constructed by the Tokugana Dasso who had held Hakodadi during the previous winter and spring. What they could have seen in this locality, either as a defensible position, or as having any other recommendation, I cannot see. Had they occupied Edomo peninsula and fortified the entrance of that harbour, it would have been an entirely different thing.

I have little doubt the climate is somewhat more temperate on the south side of the range of mountains which run across the country from Taromai to Sirebets and the westward. Until I reached Hakodadi even, the weather continued mild, but November closed the autumn, and then a winter set in, which, for steadiness and the amount of snow, the Japanese declare has not been equalled for fifteen years. The minimum temperature, however, was not unusually low; in fact, not so low by some degrees as it has reached before; but the snow covered the ground the entire winter without a break, which is very unusual for Hakodadi. I have attached hereto some meteorological tables, giving the results of several years' observations, which will give some idea of the climate. The climate of Hakodadi may be taken to represent that of the whole of Yezo, with certain modifications. For instance, speaking generally, the northern part of the island will naturally be subjected to a more severe and somewhat longer winter, a colder spring,

and rather shorter autumn; but with, probably, little or no decrease in the summer temperature. On the north-west and west coast, doubtless, the cold winter winds are more severely felt, and there is most snow; while the east and south-east sides of the island on which the Pacific breezes impinge, are exposed to a damp atmosphere, and the rainfall in summer is probably greater than elsewhere. The north-east coast, I should imagine, to be on the whole the most inhospitable, as the ice driven down and packed along that shore must take a long time to melt, necessitating a cold spring. In fact, spring weather at Hakodadi is usually cold and disagreeable, and one can hardly consider the summer as commencing before June. In general, I should imagine the west side of the island to enjoy the better summer weather, and the south-east side the milder winter. It had been my intention, if possible, in travelling from Porobets, instead of keeping on the north side of Edono Harbour, to go along the peninsula and remain at some house there for the night; but having travelled ahead of my baggage, and being told at Porobets that there was no village or even occupied fishing-station in the harbour—but that I should be forced to pass the night as best I could, without my blankets—I gave up the idea, and went right on to Mororau. When I got there, not wishing to pass without an inspection of the harbour and peninsula, I ordered a skiff to be ready in the morning to take me over by water. However, when the morning came, a breeze sprang up which would have prevented my returning the same day. I was obliged unwillingly to relinquish the trip, and content myself with a distant view from the heights above Mororau, from which I made a sketch of the place.

Having waited to see if there was any likelihood of the wind changing, it was rather late before I got away from Mororau on the 26th. A messenger who had been sent out with letters for me from Hakodadi, travelled along with me as servant, riding the baggage horse, while I strode a pack saddle on my blanket, with extemporized stirrups of straw-rope.

Just west of Mororau the coast turns abruptly north by west towards Uszi volcano, of the jagged peaks and steep slopes of which a good view is obtained all along the road. This mountain stands only 2 or 3 miles from the shore of the bay. It has two peaks and a smaller pinnacle. Both peaks are on fire, and much steam escapes from them. Below them is a sharp ridge, having a direction about east and west quite horizontal; thence the mountain slopes down on all sides that are visible. At the time I saw it its upper slopes were streaked with up and down lines of snow—probably filling the gullies, which gave the mountain a zebra-like appearance.

A deep valley cuts into the mountains on the south-east side

of Uszi volcano, down which flows the Osarubets river. On the east side of the river, but at some distance back, is a high range of mountains, whose lower slopes are prettily dotted with oak-trees, and near the sea is a high terrace. Several streams come down from these mountains, some of them coloured with sulphur. The valley of the Osarubets is partially wooded, and there are some patches of ground under cultivation by the Ainos. Thence along the route to and beyond Abuta, frequent patches of cultivated ground are met with. In other parts of Yezo I had not observed the Ainos anywhere to devote themselves to agriculture, but I inquired here about it, and found that in this region they all farm more or less. They grow "awa" (millet) potatoes, turnips, and other vegetables successfully. Only the working Ainos are found in rice ($\frac{1}{2}$ -sho daily) in this district, and no saki is supplied as a ration.

Ascending out of the valley of the Osarubets, a broken, undulating country is passed over, cutting off a point between the river and Uszi, and all on this track, which is in reality the lower slope of the volcano, large boulders of rock lie scattered. Perhaps I improperly call them boulders, because they are not worn or of rounded appearance, as having been rolled or drifted to where they are, but just look as if they had been flung into the air by volcanic action and come down where they now lie.

Uszi is a collection of Aino huts, a quasho, some other houses, and a temple, situated on a beautiful little lake-like harbour, half a mile long by a quarter broad, with a narrow entrance from the sea, between rocks showing themselves in various places just outside and towards the eastward.

Uszi is 6 ri from Mororan, and 2 from Osarubets-River. One more ri along the shore below, land sloping gradually from the mountains, with a southern aspect and clear of woods, brought me to Abuta. This locality has all the appearance of a fine agricultural district, and being right in a corner of Volcano Bay, protected both from easterly and north-westerly winds, ought to enjoy a comparatively warm climate. The Japanese tell me that rice is cultivated successfully there. Abuta is but a small station of itself, but is the head-quarters of the district, which includes Ribungi and the coast in that neighbourhood. It is the last "bashi" district on Volcano Bay, the settlements thence towards Hakodadi being called "mura," and are under municipal government. In the Abuta district there are some 600 Ainos.

I had expected to have had to stay at Abuta for the night, but as it was yet early when I reached that place, I procured other horses, and an Aino boy as guide, and proceeded, with assurance from the people at the station that although the road was "not good," it was not so bad as I should have to travel the following

day. I found the road certainly was "not good," for it was one of the worst I had passed over in the whole country. Between Abuta and Ribungi, in fact, the passage is over three high wooded mountains and one lesser one. Rocky ground and mud holes alternate, with many very steep places, so that it requires a good pony to pull through the journey; luckily, I had one that climbed like a cat, and besides was good at picking its way, if so it can be called, when the whole breadth of the track is one sea of mud. Before we had gone halfway the sun set, and the scene was very beautiful, as it disappeared behind the hills on the south-west side of the bay. We had to do, at least, one-third of the distance after dark. How we managed it, or rather how the horses did, I cannot tell; for in the shade of the woods it was so dark that it was impossible to see a few yards' distance. I left all to the horse, contenting myself with shielding my face from blows of branches of trees, which I could not see, and holding on with the other hand to the cantle of the saddle to keep myself in position when descending the steepest places. Frequently my horse almost lost its footing, and would have to make a sudden rush down the steep mountain side in order to keep on its legs, the impetus carrying him at times so far, that I thought he must either roll over or continue his slide to the bottom. It was certainly a terrible road to travel by night; and, as might be expected, we did not reach Ribungi till very late. On this route we crossed one river by fording and another by a bridge. The distance is reckoned at $4\frac{1}{2}$ ri.

Ribungi is a small station situated on the shore of a bay in this otherwise high rocky coast, and surrounded by high mountains. The land road onwards, as far as Sitskari, a distance of $3\frac{1}{2}$ ri, is over very rugged mountains, and strikes some distance inland. It was described to me as very bad, and as the following morning was fine, clear, calm, and frosty, I took the offer of the people at Ribungi to forward me for that distance by boat. Getting out of the bay our course was s.w. and w.s.w. along a high rocky shore, with fine cliffs, pinnacles, caves, ravines, and such features as are peculiar to sandstone and conglomerate rock, of which this mountainous region seems to be principally composed.

At the end of this precipitous coast we put ashore at a couple of houses called Sitskari. A low shore, on which is a good deal of drift-wood, extends thence 3 ri w.s.w. and s.w. to Oshamambe. The mountains are much lower and removed from the sea, leaving an interval of level scrub-bamboo, on which the travelling is good, which distance I made on horseback.

Oshamambe is a village of 40 houses of Japanese, besides a number of Aino huts situated on the right bank of a river close

to the sea. The people told me that it was not a very favourable situation for agriculture, as easterly winds have much influence; it may be there is a draught across this narrow neck of land between the Pacific and the Sea of Japan. They assured me that buckwheat could not be got to ripen, if sown after wheat or barley had been cut, which is the usual custom—though a bad one—about Hakodadi; but that Abuta, previously mentioned, and Yamakusinai and Otsopi on the south-western side of the bay were much more favoured situations.

At Oshamambe the river comes down a long valley out of the mountains about north-west. Here the main northern road of Yezo—if it deserves the name of a road at all—leaves the shore of Volcano Bay and strikes across to the west coast.

Mount Sirebets, probably the highest mountain in Yezo, is seen from Oshamambe about north-east, and from all along the west and south side of Volcano Bay, overtopping all the coast mountains. It is a very fine peak, more or less conical, and appears to be an active volcano. Both Romanotaki and Uszi volcanoes are also in view at the same time, so that, as I have before remarked, this bay has been very aptly named.

I took dinner at Oshamambe, and then, getting fresh horses, rode along the good hard sandy beach of the bay 5 ri to the small village of Kurowiya. Some small streams fall into the bay, in one of which formerly, under the old Tokugawa Government, gold was washed.

At Kurowiya the highlands approach close to the shore, and there is a mass of jagged rock projecting a little into the sea, which is of a hard flinty nature, with veins and spherical nodules of white quartz in it.

I stayed the night at Kurowiya, and next morning, getting away tolerably early, rode $2\frac{1}{2}$ ri along a soft sandy beach, and on the sand ridges s. $\frac{1}{2}$ w. to Yulap. Yulap is not a large Japanese village, but contains a great many Ainos.

Beyond Yulap, the road, continuing mostly along the beach, curves to the south and south-east 2 ri to Yamakusinai. At about half a ri short of the latter place I stopped to see an iron foundry which stands back in a small valley about a quarter of a mile from the sea. At this place the iron sand, which is found in abundance along the shore of the bay, is smelted, and then hammered into malleable iron, which is sold in that state, as well as being made into knives and other articles on the place. This iron sand is found for miles along the shore of the bay, in fact, more or less, as far as the village of Mori, near Romanotaki volcano. It occurs likewise in a bay on the shore of the Strait of Tsugar, between Siwokubi Saki (Cape Blunt) and Cape Yesan. The foundry is owned by a man who has not sufficient capital to work the business to advantage. He has

an overshot waterwheel of 16 feet diameter for driving two large pairs of bellows, and some stampers. When I was there the workmen had just broken down the furnace to get out a large mass of cast iron which had been the result of one charge; and for each new smelting they build up a furnace, seeming to have no idea how to run the metal out of the furnace into pigs. The out-turn of cast metal amounts to one-third the weight of the sand, and the wrought iron one-half of that.

About 6 ri up the Yulap valley are lead mines, which were formerly worked by the Tokugana Government, but, like the gold washing, also given up. About four years ago they were re-opened by a private individual, and now yield, along with the lead, a considerable proportion of silver. This man has likewise but a limited capital.

There are, besides, springs of petroleum at or near Yamakusinaï, but in passing that place I forgot to inquire about them. I may as well also mention in this place that there is a lead mine in a valley near the village of Ono, not more than 18 miles from Hakodadi, which was formerly worked by the government, but has now been abandoned for some years. One of the first sources of wealth in Yezo are the mines, which, although it would be almost impossible for the government to work with a profit, might advantageously be leased to companies or individuals having the capital and energy to carry on such works.

I took dinner at Yamakusinaï, and there being some difficulty about getting horses my servant and I walked, while the baggage was carried on one horse to Otuspi, a distance of but 2 ri. There we got horses again, and went on 3 ri more to Wasinoki, where we stayed for the night. Yama-kusiinaï is a long straggling village, and the road thence follows a sandy and sometimes stony beach about E.S.E. Thence to Otuspi, the uplands skirt the shore, with high clay, sand, and gravel cliffs, above which in bad weather the track passes, otherwise the beach is followed. The sand is mostly of iron, and many of the stones are rotten quartz.

Between Otuspi and Wasinoki the track is along the beach, which is partly good and partly indifferent travelling. From the sides of some of the cliffs a yellow-ochre-looking substance oozes in considerable quantity.

Wasinoki, or, as it may be called, Vashinoki, is the largest place in Volcano Bay, the village running in a single street along the heights close to the shore. The hillsides are broken by some gullies and small valleys. On the uplands is extensive cultivation for a considerable distance back. The situation of the place is very pretty, and Romanotaki, bearing E.S.E. over the farther point of the slight bay, is near enough to have an

ITINERARY OF A JOURNEY IN YEZO.

	Places.	Ri.	
1889			
Oct. 6	Hamanaka (Akis) .. .. .	..	..
.. 7	Atehi Shibets	9	..
.. 7	Pitszkai (Nisibets R.)	2	..
.. 8	Shibetsa Qunisho	9	..
.. 9	Tazrayi-watari (Shibets R.)	7	..
.. 10	Wakaowi (Shara R.)	9	..
.. 11	Share	10	..
		46	
.. 12	Sharo .. .. .	..	..
.. 13	Abasiri	9½	..
.. 14	Tokoro	6	..
.. 15	Yubets	9½	..
.. 16	Mombetsa Qunisho	6½	..
.. 17	Sawaki	8	..
.. 18	Horonai	6	..
.. 19	Chikatomushi	6	..
.. 20	Yasase	5	..
.. 21	Shonai	5½	..
.. 22	Shonai .. .. .	..	..
.. 23	Sarobets	10	..
.. 24	Soya Qunisho	13	..
		85	
.. 25	Soya Qunisho .. .. .	..	..
.. 26	Bakni	8½	..
.. 27	Teshiu	13	..
.. 28	Furibets	8	..
.. 29	Tomamui	8	..
.. 30	Ruromopi	11	..
.. 31	Maski	5	..
.. 31	Yuwawi	4	..
Nov. 1	Hama-Maski	4	..
.. 1	Gokibiru	4	..
.. 2	Oshirokotez	4	..
.. 2	Iskari	4	..
		73½	
.. 3	Otarunai	9	..
.. 4	Oshoro	5	..
.. 4	Yoitchi	1	..
.. 5	Rubispo	6	..
.. 6	Iwanni	8	..
.. 7	Kalyannoma Coal Mines	2½	..
		31½	
.. 11	Kaiyannoma Coal Mines .. .. .	..	..
.. 12	Iwanni	2½	..
.. 12	Shannatskinni	4	..
.. 13	Yoitchi	10	..
.. 14	Otarunai	6	..
.. 14	Zenibako	4	..
.. 15	Iskari	5	..
		31½	
.. 18	Iskari .. .. .	..	..
	Carried forward .. .. .	..	267½

East Coast.

Inland.

North-East Coast.

North-West Coast.

North-West Coast.

Inland.

West Coast.

Inland.

North-West Coast.

Iskari River.

ITINERARY OF A JOURNEY IN YEZO—*continued.*

	Places.	Ri.		
1869	Brought forward	267½	
Nov. 19	Satsuporo-hito	4	..	Iskari River.
.. 20	Tszi-iskuri	6	..	
.. 21	Isaributo	10	..	
.. 22	Sitosi-kawa	5	..	
.. 22	Uvinai	3	..	Inland.
.. 23	Yubuts Quaisho	4	..	
			32	
.. 24	Sirawi	9	..	South-East Court.
.. 24	Aiyiro	3½	..	
.. 25	Parobe's	3½	..	
.. 25	Mororau (Enderma)	5	..	
.. 26	Uzzi	6½	..	Volcano Bay.
.. 26	Abuta	1	..	
.. 26	Rilungi	4½	..	
.. 27	Oshamambo	6½	..	
.. 27	Kurowiya	5	..	
.. 28	Yulap	2½	..	
.. 28	Yamakusimai	2	..	
.. 28	Wasiuoki	5	..	
.. 29	Mori	½	..	Inland.
.. 29	Sikonopi	4	..	
.. 29	Ono	4	..	
.. 29	Hakodati	5	..	
			67½	
	Total	367*	

imposing appearance. There are about 100 houses and two or three temples. Salmon fishing was going on when I passed, there being a net set out into the bay from the village no less than 360 fathoms long, with a boat moored at the end of it. Besides salmon the principal fishing is herring, iwashi, irico, and skate in their seasons.

I made up my mind to reach Hakodadi on the 29th of November, but being assured, as usual, that it was not possible, as the roads were in very bad condition, I rose early that morning and waited some time for the horses; but as these did not appear, I left my servant to look after the baggage and started on foot. Half a ri along the shore and across a river took me to Mori, where, meeting a man with three horses, which he said he was going with to Wasinoki on government service, or "goyo," as it is called, and supposing that the horses were for me, I without further parley annexed one, borrowed a small quilt to put on the saddle in place of my blanket, extemporised a pair of stirrups with the baggage-ropes, mounted on the pack-saddle, and reached

* = 895½ English miles. N.B.—One Japanese Ri = 2·44233 English miles.
 = 2·12377 Geographical miles.

Hakodadi by sunset, completing a journey of 900 miles, almost entirely over ground hitherto untrodden by any foreigner.

REMARKS ON THE CLIMATE OF HAKODADI.

With a mean annual temperature of $47\frac{1}{2}^{\circ}$, differing little from that of places 10° north of the same latitude in Western and Central Europe, the thermometer ranges at Hakodadi through 82° of Fahrenheit, and is subject to sudden and considerable fluctuations, depending mostly on the direction of the winds, which its insular situation, near the shore of a great continent, with a vast expanse of ocean to the eastward, is sufficient to account for. The north-westerly and westerly winds, which prevail for more than half the year, are chilled with the cold of the plains of Mongolia and the Siberian wilds, while east winds, charged with moisture from the Pacific Ocean, are of a comparatively high temperature. The winter would be even more severe were it not for the warm ocean current which constantly flows up the Sea of Japan and through the strait separating Nipon from the island of Yezo.

January and February are the coldest months, while March differs little from December. July, August, and September are the warmest, the decrease of temperature after the middle of September being usually sudden. The spring is protracted and cold.

The barometer is highest in October and November. The most rain falls in July and August, at the time of the prevailing easterly winds, and the most snow in December and January.

Fog is of very unfrequent occurrence in the immediate vicinity of Hakodadi. It is confined to the spring and summer months, but principally June.

North-westerly winds set in in the latter part of October, and continue till March. South-west winds prevail in April; south in May; south-east in June; east in July and August. In September east and west are fairly divided, the latter gaining the ascendancy after the equinox. Thus it will be seen that the wind veers round gradually during the spring and summer, from north-west by south to east, when at the equinox it suddenly jumps back to westerly. Due north winds do not often blow at Hakodadi, and never for any length of time, while a north-east wind is a rarity; which peculiarity may be in part owing to the physical configuration of the country in the neighbourhood.

The break-up of the hot weather at the end of August and early part of September is usually accompanied by one or more

RESULTS OF METEOROLOGICAL OBSERVATIONS AT ILAKODADI, JAPAN.

LATITUDE $41^{\circ} 46' \text{ N.}$, LONGITUDE $140^{\circ} 45' 30'' \text{ E.}$

	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Year.	
TEMPERATURE OF THE AIR— (Fahrenheit) . . . Mean	26.46	29.61	31.55	44.10	52.71	58.65	61.66	68.79	64.65	52.80	40.92	32.27	47.47	See Note A.
Extremes . . . { Max.	49.5	46.5	60.0	66.0	71.0	78.0	81.0	84.0	81.0	73.0	60.0	52.0	81.0	
Min.	2.0	5.5	13.0	23.5	31.0	42.5	48.6	51.0	45.5	31.0	21.0	8.0	2.0	
BAROMETER— Mean height, 18 feet above sea level	29.918	29.953	29.913	29.912	29.900	29.853	29.863	29.851	29.917	29.992	30.074	29.931	29.931	See Note B.
RAIN— Average number of days .	2.8	1.9	5.5	10.0	10.2	8.5	12.3	43.2	12.1	11.2	9.6	5.8	103.4	
SNOW— Average number of days .	15.5	10.8	8.0	2.5	..	..	..	..	..	1.2	4.9	12.5	55.4
Fog— Average number of days .	..	0.14	0.43	0.3	0.7	2.36	1.70	0.3	5.93	See Note D.
WINDS— General direction . { N.	4.36	6.57	4.50	3.11	1.50	1.07	0.61	1.21	3.29	3.83	6.50	7.50	44.08	
E.	2.75	2.50	3.36	5.71	6.79	9.07	11.0	44.36	7.93	5.33	2.92	1.58	76.30	
S.	2.14	2.0	4.0	7.50	10.0	8.36	5.43	7.43	4.29	4.83	4.75	2.93	63.66	See Note D.
W.	17.43	12.71	13.57	10.11	7.93	5.07	3.93	3.14	8.11	12.92	12.25	15.94	123.16	
GALES— Average number . . .	1.5	1.0	1.43	1.7	0.7	1.14	0.86	1.13	2.3	1.0	1.5	1.3	15.86	

Note A.—The TEMPERATURE is deduced from daily observations of registering thermometers during five years, 1863-70.

Note B.—The BAROMETER is deduced from daily observations of an aneroid (No. 29152) during three years, 1868-70, during which period the extreme range was between 29.11 and 30.36. The yearly mean reduced to the sea level is 29.951. The late Dr. Albrecht's observations with a mercurial barometer, corrected for temperature and reduced to the sea level, give 29.977.

Note C.—The RAIN and SNOW deduced from eight years' observations, 1860 (Albrecht) 1864-70. The quantities measured in 1860 by the late Dr. Albrecht were Rain, 30.24 inches; Snow (melted), 7.81 inches; total precipitation, 38 inches.

Note D.—The Fog and Winds are the results of seven years' observations from 1864-70.

revolving circular gales, which appear at that season to break off from the regular course of the typhoons which pass from the latitude of Formosa ont to the eastward, and coming by way of the Strait of Corea, make their way up the Sea of Japan, passing with their centres to the westward of Hakodadi. In fact, most of the gales experienced seem to follow this course, as the wind commences at east and almost invariably veers by south to the westward: while those gales most severely felt about the neighbourhood of Yedo are usually indicated at Hakodadi only by a low barometer and rain, with often a heavy swell setting in from the Pacific.

V.—*An Expedition through Manchuria from Pekin to Blagovestchensk in 1870.* By the Archimandrite PALLADIUS, Chief of the Russo-Greek Church Mission at Pekin. Compiled from the Journal of the Archimandrite, and translated by E. DELMAR MORGAN, F.R.G.S.

[Read, February 26, 1872.]

My object in this paper is to give some details about an Expedition organized by the Imperial Russian Geographical Society to explore Manchuria, and the maritime province of the South Ussuri.

The route taken by this Expedition diverged from that of Williamson,* at a point two stages north of Girin, where, instead of following the road to Larin and Ashe-hoh, and thence to Sansing (Williamson's farthest), the Russians turned to the left, and continued their journey up the right bank of the Girin ula, or Sungari River, to its confluence with the Nonni, a tributary of the Sungari (Tu-Kiang, *i. e.* great river); and, after crossing the two rivers a short distance above their confluence, ascended the left bank of the Nonni, which Palladius considers is entitled to rank before the Girin ula, as the parent-stream of the Sungari, as well on account of the greater volume of its waters as of the greater length of its course.

The Russians visited the city of Tsitsihar, near the confines of Eastern Mongolia, and leaving the Nonni at Mergen, crossed the branch of the Hing-an Mountains, which forms the watershed between the Upper Amur and the head-waters of its great tributary the Sungari; and, after crossing the Amur at Aikhun, arrived safely in Russian territory.

* "Notes on Manchuria." By the Rev. Alexander Williamson. 'Journal of the Royal Geographical Society,' vol. xxxix.

MAP
to accompany
NOTES OF A JOURNEY THROUGH
MANCHURIA
by the
ARCHIMANDRITE PALLADIUS

English Miles

0 40 80 120

Geographical Miles

0 40 80 120

Russian Versts 1045 = One Degree

0 40 80 120

Chinese Li 250 = One Degree

0 40 80 120



Their journey was, therefore, partly through a country which had not been visited by modern European travellers; through vast prairies teeming with vegetation, where, in the words of the Archimandrite, "Nature welcomes the traveller as a rare guest, and surrounds him with her choicest gifts," but also through dismal swamps and thick forests, infested by innumerable swarms of gadflies, which attacked man and beast with relentless fury.

The geographical results of the Expedition are increased by a sketch-map of the route from Peking to Aikun, drawn by the Russian topographer who accompanied the Expedition.

The diary of the Archimandrite Palladius records his impressions of the country and its inhabitants; and his knowledge of the languages of Eastern Asia has enabled him to throw the light of his erudition on monuments of dynasties and races of men who once played an important part in the world's history.

Estimating the geographical results of this Expedition, M. Veninkoff, the well-known Asian traveller, says that the Russian route map is the only topographical work since the time of the Jesuits, which includes both Southern and Northern Manchuria; and that it not only adds to, but, in some degree, corrects, our knowledge of the high-road from Peking to Aikun.

On comparing the Russian map with the Chinese atlas, it has been found to agree very nearly with the latter, with one marked exception, which occurs in the first section of the route between Peking and Yung-ping-fu, where the distance on the Russian map between these two cities is found to be 154 miles, whereas on the Chinese atlas it is only 127 miles. So important a discrepancy must, in some measure, be accounted for by supposing that, in the earlier stages of the route, the topographer had not formed a correct estimate of the rate of progress of his caravan.

It is worthy of remark that, in that section of the post-road between Kin-chow-fu (Shwang-yang) and Mukden, while the concurrent testimony of Chinese and European maps, including Williamson's, the most recent of all, assign the direction of the road between the above-named places as due East and West, the Russian map shows that the road for the last two stages (37 miles) before entering Mukden, is directed from a north-westerly direction towards that city.

This alteration will affect the positions on our maps of the station of Sing-min-tun, and the fortress of Kiu-liu-ho, by removing them more than 20 miles farther north; and the course of the Liao-ho River between Kiu-liu-ho and the sea would also require rectifying.

Finally, in the section of the route between Pe-tu-na and

Tsitsihar, no less than twenty-three lakes are marked on the Russian map, whereas the old maps have only seven or eight. This large number of lakes shows how level is the plain of the left bank of the Nonni, and also indicates the excessive moisture of that part of Manchuria, notwithstanding the prevalence of dry winds from the neighbouring country of Mongolia, whose course across the Hing-an Range is unimpeded by the comparatively low elevation of this range in the 46th degree of latitude.

The level nature of the plain implies a sluggish stream in the Nonni, and this, as a fact, is confirmed by the diary of the Archimandrite, who describes that river as forming great bays, in which there is hardly any current. Like most marshy rivers, its channel is beset by shallows.

The Expedition was composed of the Archimandrite Palladius, of the Russo-Greek Church Mission at Pekin, M. Nachvalnich,* a Russian topographer, and a Chinese servant (a convert to the Russo-Greek faith). They selected the longest route *via* Mukden, Girin, Tsitsihar, and Aikhan, to Blagovestchensk, in Russian territory. From the last-named town there is steam communication to the Hankhai district. The reason for selecting this route was its practicability for wheeled conveyances during the summer months, while the other routes through Eastern Mongolia and *via* Ningutá are only passable during the summer for pack-animals; in the winter, when the ground is frozen, they may be driven over in carts.

A protective letter (*khu-te-chau*), provided by the Pekin Foreign Office (*tsung-li-yamen*), granted free right of passage to the travellers through the three provinces of Manchuria (Mukden, Girin, and Tsitsihar), and along the Russo-Chinese frontier.

They left Pekin on the 30th April, 1870, by the north-eastern gate Tung-chi-mun, and, travelling only a short distance that day, halted for the night at Tung-chow, on the Pei-ho River, an important entrepôt for the tea-trade between Tien-tsin and Kalgan, as well as for the supplies of provisions from the north-eastern district to the capital.

The bridge (*Pa-li-Kiau*, i. e. 8-li bridge, because it is 8 li from Tung-chow) across the canal, which unites Tung-chow with Pekin, was the scene of an engagement between the Anglo-French army and the Celestials, commanded by Prince San-ko-lin-sin. Its fame in China, however, dates from a far earlier period before the rule of the present dynasty, when it was celebrated for its great strength and massive brass girders. Among other

* M. Nachvalnich is the author of the route-map from which the map accompanying this paper has been drawn.

objects of interest at Tung-chow is the Buddhist temple of Ta-vang-miau, in the eastern suburb of the town, dedicated to the guardian spirit of the corn-floating river, and now used as a store for their teas by some Russian merchants. Tung-chow is a busy place. Here may be seen barks laden with rice for the Government stores at Peking, strings of carts with their loads of pulse and a small kind of millet, also intended for the capital, and boats from Tien-tsin waiting for the pack-camels to discharge the supplies of tea destined for Russia *via* Kalgan, and the great desert of Gobi.

After leaving Tung-chow, the road crosses a branch of the Pei-ho River by a temporary bridge built on piles; the roadway is made of fascines covered with straw and clay. The Pei-ho or White River is usually called Yun-lian-ho ("corn-floating River"), or simply Yun-ho ("navigable River") till it reaches Tien-tsin, where it is joined by the Imperial canal, and, henceforward to the sea, bears the name of Hai-ho or Sea River.

The importance of this river to the Government is twofold: on the one hand it serves to transport their stores of grain to Tung-chow, on the other to supply with provisions their garrison at Ku-pe-k'ou, a place of some importance in the hills on the road to Jehor, the former summer residence of the Manchu emperors. There is still a garrison at Ku-pe-k'ou, which is also the headquarters of the Commander-in-Chief (Ti-tu) of the province of Chihli. The road passes some large villages, Yan-tsiau, Ma-tsi-fa and Sia-tien, following a wide open valley with a distant view of the mountains to the N.E. as far as the little trading village of Tsao-lin ("rustling wood"), after passing which the San-ho or triple rivulet (from its three sources) is crossed by a light bridge. Before arriving at the night halting-place at Pang-tsuen, the road passes the long village of Duan-kiang, so called after the hill at the foot of which it is situated; the scenery in this part of the road is very pretty. The next village is In-liü ("shaded by willows"), situated on the In-liü-ho, a little river also called Tszi-yun-ho, or the river navigable to the town of Tszi-chow, which lies to the left of the road. Supplies are sent by the Tszi-yun-ho to the troops stationed near the Imperial eastern cemeteries. The slopes of red clay soil were now distinctly visible in the mountains to the north—the soil on these mountains is almost entirely red clay; in places where they are broken into fissures and ravines, the layers of rocks denuded—present from top to bottom a perfectly symmetrical formation; there are very few rocks at the foot of the mountains. In the plain the soil is everywhere excellent, agriculture thrives and the population is dense.

The next halting-place is the village of Peh-shan, at the foot

of a hill standing apart from the range which gives its name to the village. At this and many other villages along the road our travellers found the people celebrating the holiday of the 4th moon, in honour of which fairs were being held, theatres were opened and crowds of men, women and children thronged the streets in holiday dress. The road skirts the foot of the mountains, twice approaching their very base—its execrable condition considerably hindering the traveller in reaching the village of Tsai-ting-kiau ("bridge with ornamented pavilion"); there is no pavilion now, and the bridge is in ruins.

Towards the evening of the 2nd May the Archimandrite entered the district town of Yui-tien-hien. Yui-tien signifies the field of nephrite, but the town is situated in a sandy plain; its walls are handsome and regularly built. Strings of carts, laden with corn, droves of pigs from Manchuria, mules and asses on their way to market, and cart-loads of writing-paper from Luan-chow gave to the road an animated appearance. Two little streams lie between Yui-tien-hien, and the next halting-place, the dilapidated and unimportant little town of Fing-jun-hien. Fing-jun signifies rich or fruitful, which would imply that the soil of the district is rich (however that may be, the road is very bad); the country now becomes more hilly, indeed the whole district of Yung-ping-fu is of a mountainous character—the road gradually ascends the neck of the range, an isthmus of high land which unites the northern and southern chains of mountains, the ascents and descents are continual, as the road now follows the windings of a ravine, now approaches dangerously near the edge of a precipice with an abrupt descent of some 50 feet and in some places overhangs terraces of red clay, so abraded and undermined by the rains as to make it unsafe for travellers at night or in rainy weather. These hills were infested by horse-robbers, whose deeds of violence lately disturbed Manchuria. When pursued by the soldiery some of them made their way, by footpaths across the mountains, to those defiles in the labyrinths in which they could baffle pursuit. The descent from the pass leading to the village of Chen-tszi-chen is long, rocky and difficult, the village is large and clean and its chief street is well provided with footpaths; the name signifies village of hazel-nuts, but as there are no hazel-trees here, it is probable that the name was derived from a store of hazel-nuts, brought from Manchuria. These hills abound in lime, but there is no coal.

After leaving Chen-tszi-chen, the road approaches the southern mountain-chain, along the summits of which are mounds bearing traces of old watch-towers. The plain is here and there studded with volcanic cones, among the most remarkable of which is the hill of Shau-yang-shan, crowned with a

temple dedicated to two brothers, sages of old—the heroic Boi and Shutsi—who retired to these hills and were rewarded with perpetual youth; their images as boys are worshipped by the Chinese. On either side of the road the sandy wastes are frequently relieved by luxuriant plantations of fruit-trees; the cherry-tree, owing to its bright green foliage, standing out most conspicuously among them.

An ascent now leads to the village of Wang-fu-tai, *i.e.*, terrace from which the town of Yung-ping-fu is visible; a short distance beyond which the ridge of mountains terminates abruptly with a steep descent known by the name of Shi-ti-tszi, or stone staircase; above which are the ruins of an old fortress, consisting of three or four square towers either hewn out of the rock or so timeworn as not to be distinguished from it. These towers are surrounded by a kind of terrace, which is also probably hewn out of the rock. The learned archaeologist here remarks that the foundations of this fortress were laid at a time when, as the Chinese race spread towards the north-east, it was obliged to protect its territory from the *forays* of the hill-tribes—Shan-jung. The position of the fortress is very advantageous for strategical purposes; commanding the valley of the Luan-ho, it is itself protected by that river on the east, while to the west it is connected with the heart of the country by the chain of watch-towers. The view from the summit of the Shi-ti-tszi is very extensive; in front and on both sides is an expanse of sandy plain, marking the basin of the Luan-ho; while above, the gloomy ruins tower over the surrounding landscape. The descent into the valley is very steep. The Luan-ho is a deep, rapid, clear stream, about 70 fathoms wide, and is here joined by a tributary, the Ching-ho (more correctly Ching-lung-ho), which flows past the district-town of Yung-ping-fu. After crossing the two rivers by light temporary bridges, some rocky and somewhat elevated ground has to be traversed before entering the town. Yung-ping-fu is not large, although fortified and garrisoned by some troops. From the earliest period it was a place of great military importance; its inhabitants, owing to the hilly and rocky nature of the district and the ungenerous soil, could barely find subsistence, and were forced to seek other means of livelihood by emigrating, like the inhabitants of Shan-si and Shan-tung, in large numbers to Manchuria, where they are chiefly engaged in trade. The district of Yung-ping-fu is the boundary of the country known in official language by the name of King-tung, *i.e.* the country east of the capital; a province celebrated as much for the fertility of its soil as for its breed of cattle and forests of timber, and capable of supplying large quantities of food to Peking when

necessary. Some rocky hills lie beyond Yung-ping-fu, where the road is hewn out of the granite rock, and is, in some places, hardly wide enough for one vehicle to pass. Some of these narrow passages are one-third of a mile long, and the drivers shout at the top of their voices before entering them, to give warning of their approach.

The next village, Shwang-wang, is near two volcanic cones; the name Shwang-wang (which means to look at one another), was doubtless suggested by the position of the two hills near the village. The road now follows a defile in the mountains, and after crossing a sandy bed of a river, enters the little town of Funing-hien, about 5 miles to the north of which a dark, wild mountain-range is visible. The flat-roofed houses characteristic of Manchuria indicate the vicinity of that country. Elms (*yü-shu*) and poplars (*yang-shu*) grow in abundance, and serve for building purposes; the squared timber prepared from both descriptions of trees is probably sent from here to Tientsin by sea (the sea-coast is only 30 li distant). After passing the little village of Yui-Kwan (*i. e.* elm-tree outpost), surrounded by elms, the night halting-place of Shin-shui, *i. e.* deep rivulet (also called Shin-ho-pu) at the western extremity of a long hill, is reached.

The 6th of May found the travellers beyond the limits of China proper. From the village of Fau-cha-tien the northern range is seen to terminate on the east with a cone. The plantations of trees are rare, and the population proportionately scanty; the hollows are filled with quicksand, and the red clayey soil is scamed with many a ravine and dried watercourse. In a slight depression in the ground, surrounded by beds of sand and shingle, lies the town of Lin-yui-hien, close to the barrier, and watered by the clear swift stream of Shi-tau-ho (rocky river), formerly called Yui-ho, elm-tree river; whence the town derives its name of Lin-yui, *i. e.* on the elm-tree river. The entrance to this town is from the east, so that it is necessary to make a considerable circuit before entering the outer gate. A second gate in a thick, high wall, leads to the inner town, which is more lively and better populated than could have been expected from the deserted appearance of the environs. A canal surrounds the town on the north. After crossing over a stone bridge our travellers drove into the enclosure of the guard-house or Ting, presided over by Fang-yui or Kwan-ta, the frontier commissioner, who examined their passports and interrogated them as to their identity, their rank and station in life, the object of their journey, the probable duration of their stay in Manchuria, &c.; after which they were allowed to proceed on their journey through Manchuria.

On driving out of the gates of the guard-house a good view is obtained of the great wall of China, which trails its length like a huge serpent over the summits of the chain of hills on the north-west; while to the south of the gate it extends for barely three miles to the sea: hence the name of Shan-hai-kwan, *i.e.* gate between mountains and sea. The wall is built of bricks, and in its present state was the work of the Ming dynasty; but traces of the earlier great wall, built by the celebrated Tsin-chi-Hwang-ti, are said to be found near the sea; and some of the watch-towers and parts of the rampart still remain on the hills. The mountain-range extends from Shan-hai-kwan, apparently in a N.N.E. direction, for a great distance, throwing off detached spurs to the S.E., across which the road lies over rocky elevations of a reddish colour; from the summit of one of which the sea is visible. Not far from the fortress the road passes over a hill, from the summit of which emigrants leaving China can obtain a farewell view of the barrier, and homeward-bound travellers first catch sight of their native land. Hence it bears two names, Tsi-huan-ling, hill of sorrow, and Huan-hi-ling, hill of joy. A hamlet called Hung-kiang-tsz (red wall) is then passed, half a mile from which stands a solitary rocky cone, crowned with a temple called Tsin-nü-miau, and dedicated to Sini-ming-tsin, the renowned wife, about whom there is a pretty legend. When Tsin-chi-Hwang-ti drove 100,000 men to build the great wall, this woman's husband was among the number; time passed and no news were received of him, so at length she determined upon setting out alone and on foot to find him. Arrived at the sea-coast near this place, she discovered that her husband had died at his work, and had been buried by his comrades at the foot of the great wall. Distracted with grief at the news, the poor widow sought out her husband's tomb, and, after bewailing his fate, dashed her head against the great wall. The stones were moved to compassion by her grief and devotion, and the wall fell and buried her upon her husband's tomb. This legend has formed the subject of several Chinese poems, holding up to universal execration the memory of Tsin-chi-Hwang-ti. A stone statue of a weeping woman stands on ground commanding a view of the sea on one side, and of the great wall on the other; and an inscription on the temple runs as follows:—"Where is the Emperor Tsin now? The great wall bears him everlasting hatred, though Tsin-nü is still remembered; and a stone will perpetuate the memory of her conjugal fidelity."

Upon entering the Kwan-tung, *i.e.* the country east of the frontier, the travellers met crowds of people on the road, some in carts, others riding horses, mules, and asses, but mostly on foot.

These were chiefly traders and miners, natives of the province of Shan-si, returning home from the gold diggings (*pau-li*, *i.e.* "precious earth") in the East. They passed silently along the road, with grave, anxious faces, tanned by exposure to the weather, and begrimed with dirt: parties of them were here and there seen resting under some tree or partaking of a meal; there were women and children among them, and the same grave silence was observed during the halt as on the march, as if their thoughts were engrossed with their hard-earned store of wealth, which they carried tightly bound up in their belts. There were poor ragged pedestrians among them, faint and weak from hunger, who could hardly drag their weary limbs along. Occasionally a gaily-dressed Mongol lama would ride past, mounted on a handsome mule or a horse, on his way to make a pilgrimage to his saint at Wu-tai-shan.

But these wayfarers are not the only objects to arrest the attention of the traveller in a country replete with historic interest, and abounding in traces of old wars and military occupants. Almost every knoll in the rolling landscape is crowned with a cone-shaped tower, some in a good state of preservation, others half ruined and overgrown with grass and underwood. These towers are built of excellent bricks, and stand on quadrangular terraces; they are about thirty feet high, gradually narrowing towards the top, where they finish in embrasures: their circular, well-proportioned shapes look well from a distance, and if they only had convex roofs would closely resemble the Roman towers. Many of them have crumbled away, till nothing is left but a heap of rubbish. They are now called *Dun-tai*, *i.e.* "watch-towers" or "beacons," but they were originally intended to serve another purpose. They were built during the Ming dynasty, along the great highway of the present province of Shing-king (Mukden), and were then called *Lu-tai*, *i.e.* "roadside towers," and were designed to serve as towers of refuge to succour travellers from the forays of the Uriankha and Churchi, for which purpose a few armed soldiers were stationed in each tower, whose duty consisted in letting down light ladders to rescue fugitives.

The first night in the Kwan-tung was passed at the hamlet of Lau-kiun-tun ("old military settlement"). It should be remarked that a new regulation has been introduced into the inns in this part of the country; every traveller must pay for food whether he has his own provisions with him or not. If dissatisfied with the fare, he can order some more, but he must pay for every dish which has been served to him.

The buildings here are peculiar in their architecture; the walls are mostly made of rough, red stones, cemented together with

clay and lime; the roofs are slightly curved, presenting altogether an original appearance. In winter, when the roads are passable for heavy loads, the spacious courtyards of the inns are crowded with travellers.

Their next halt was at the fortress town or settlement of Tsian-wei. These fortresses, called in Manchuria "wei" and "so," were built during the Ming dynasty (1368-1644), and were garrisoned in the proportion of 5600 soldiers to each fortress of the first rank, "wei," and 1120 to those of the second rank, "so." They were further subdivided into tsian, "primary," and chung, "secondary." The military force kept in Manchuria by the Ming emperors numbered 200,000 men, who were chiefly employed in keeping under control, and resisting the attacks of, the Uriankha, the Churchi, and the Coreans. Since the accession of the Manchu dynasty, several of these fortresses have been dismantled, and the garrisons converted into military agricultural settlers. The staple food in this part of the country, and further eastwards, is dry-valley rice, which makes an excellent porridge; this rice is also called king-mi, i.e. "rice of the capital," after Shing-king (Mukden), not after Pekin: the best quality is perfectly white. There is also an inferior description of a yellowish colour; in China it bears the name of Khan-dau-mi, "dry-valley rice," and Lau-tai-mi, "old white rice." The people said that they sowed it in the second moon (March), and gathered it in the eighth moon (September). The district is also famous for its excellent pork.

On leaving Tsian-wei, the journey was continued alternately across rocky, sandy plains, and over hill and down dale to Chung-hau-so; a fortress in a good state of preservation, surrounded by a large flourishing town, which is now one of the most important industrial and commercial centres in Manchuria. Soon after fording the Niu-chow-ho River, the road ascends the hill of Pan-hung-ling, the smooth, treeless slope of which is studded with burial mounds of red clay. Springs of water force their way to the surface of the ground in all directions, and indicate the proximity of the water to the surface, even on the high ground. With the wind from the s.w., the temperature became much lower. A view of the sea is soon obtained from the slope of a hill near the sea-shore, at a little village called Wang-hai-tien, i.e. "place whence the sea is visible," with the two islands of Tsiü-hwa-tan, "island of Aster," and Tan-hwa-tan, "peach-blossom coloured island," near the coast. The plain here is covered with a rich, black loam; the rocks are of a violet and yellowish colour. Avoiding the town of Ning-yuen-chow, with its lofty wall and moat, the travellers entered a valley in the mountains.

passed a temple, and halted for the night at the village of Han-tsau-ling, so called after the pass in its vicinity. The hill near the village is a volcanic cone, pyramid-shaped, crowned with an old tower, and is a conspicuous and graceful feature in the landscape. The hill is called Tai-tsz-shan, i. e. "Tower-hill." The village is 10 li from the sea-coast. After leaving Han-tsau-ling, the road passes within 4 miles of the sea, which glistens in the distance. The large trading village of Lian-shan, which lies next on the road, has a market-place, where all kinds of common utensils, large quantities of fish, a long pointed onion, and the inevitable spinach, are exposed for sale. Broad-brimmed, conical straw-hats are sold in large numbers; they are made of a kind of reed-grass, called *simiti*, and protect the wearers both against sun and rain. To the left of this village is a range of hills which give it its name of Lian-shan, "continuous hills." The road now passes some dangerous morasses, and is a good deal submerged in places. An extensive view is soon obtained of the sea, covered with craft of all sizes, and studded with two volcanic islands, called respectively Ta-pi-kia-shan, and Siau-pi-kia-shan, from their resemblance to a writing-brush holder. The villages of San-yimiau, so called after the temple, and Ta-shan, ("hill of the tower,") are next passed; the latter is watered by a rapid stream which joins the sea. Gan-kiau (high bridge), a prosperous village, is the next halting-place. Near the hills Sing-shan (apricot-hill) and Sung-shan (pine-wood hill), a road branches off to the left to Kin-chow-fu a well-known district-town of Southern Manchuria, with a large trade. Leaving this town to the left, the high-road crosses the Siau-ling-ho (little cold river), a clear mountain-stream, upon which the town of Kin-chow-fu is situated, and soon afterwards passes the village of Shwang-yang ("double midday," so called from two hills which are near it). The distance from Shwang-yang to Kin-chow-fu is reckoned to be 20 li. Passing through some uncultivated country, bare of trees, the travellers now crossed the Ta-ling-ho (great cold river), which gives its name to the village near the ford. This place enjoyed an importance and reputation during the Ming dynasty which has since quite died away. Its dilapidated houses, deserted streets, and closed inns, give it a mournful and poverty-stricken appearance. The river with its eyots is 100 fathoms wide, and is crossed by a ford; the water is thick and the channel muddy, although its banks are sandy for a great distance. The country east of the Ta-ling-ho was suffering from famine, owing to a bad harvest; the price of provisions had enormously increased, and beggars were numerous. Some of

the inhabitants, driven by want and starvation, had joined the bands of highway robbers who infested the hilly country, and caused the officials to be continually on the alert.

The attention of the Russian traveller was now directed to a remarkable chain of hills, called the Shi-san-shan (13 hills), which are divided into 13 distinct peaks. These hills are of volcanic origin, the furthestmost is rent asunder from top to bottom, and is said to contain a small lake; the direction of this remarkable chain of hills is north-east; on the south they are surrounded by a level plain; their sides are composed of rude masses of perpendicular rocks. In the distance looms the great mountain range of Kwang-ning-shan, of which these hills are a branch. The travellers were much impressed with the grandeur of the great range, which, under the classical name of Iwu-liui, takes so prominent a place in Chinese history and superstitions.

These mountains apparently consist of bare steep rocks piled one upon another; their name Kwang-ning-shan is derived from a town near them; they are also called Liu-shan, or the six hills, owing to the six tiers or terraces which mark their ascent from the plain, but their classical name is Iwu-liui, a name not of Chinese origin; they are mentioned at a very remote period of Chinese history, when China first learnt to know the country north-east of her own territory. Iwu-liui was for ages honoured as the guardian mountain (Chen-shan) of the province of darkness, *i. e.* Manchuria of the present day; and was named one of the twelve celebrated mountains which were appointed guardians of the twelve provinces of the Celestial empire. All the dynasties of China, including the one now reigning, have paid homage and sacrificed offerings to this range. The Chinese believe that mountains, in pressing upon the soil, impart stability to the adjacent country, and assist the inhabitants to retain possession of it; hence the spirits of the mountains as ruling powers of the country, together with the spirits of the seas and rivers; and in Manchuria, the spirit of the thick forests, entitled by the Kins, "Prince of the beautiful shade" (kin-yin-hou), were ever venerated and worshipped: invaders before entering the enemy's country first made oblations and sacrifices to the genii of the mountains in order to propitiate them. The Manchus honour the Iwu-liui as a pendant to the Chang-pō-shan, both which mountain ranges protect their empire in this country. Iwu-liui is also an everlasting monument to the prince of Kitan, Jen-hwang-wang, upon whose memory Chinese geographers and historians love to dwell. When the founder of the Kitan empire in China (T'ai-tsu) put an end to the sovereignty of the Po-hai in Manchuria, he made the conquered country a dependency or vassaldom of China, under the name of Tung-tan-go (Eastern

Kitan), and appointed his son, Jen-liwang-wang, viceroy over it. This young prince was devoted to literature and science; he collected a great number of manuscripts and Chinese books, and built a library and study on the very highest peak of the Iwu-liui Range. Here he passed his days in complete solitude, with the single diversion of looking at the sea. Iwu-liui also contains the burial-place of the Kitan Tai-tsü. According to Chinese geographers this range is distinct from any other; it occupies an area 230 li in circumference, and is 130 li distant from the sea. Its formation is very different from that of the other mountains of Manchuria.

The little village at the foot of the Shi-san-shan Mountains, where the travellers passed the night of the 10th May, is called Chang-sin-tien; at this stage of the journey the road gradually leaves the hilly country as it approaches the basin of the Liao-ho River, henceforward the inhabitants are no longer called Han-jen (Chinese), but Mantszi, a name applied to all the Chinese immigrants, whether permanently or only temporarily settled in Manchuria. The name originated during the reign of Kublai Khan, who dispatched large colonies of Mantsziun—i.e. Chinese soldiers—to the borders of Corea, to resist any invasions of the Japanese, which he apprehended might ensue after his unsuccessful expeditions to their country. These Mantszi have nearly absorbed the native races of Manchuria; they are chiefly from the provinces of Shan-tung, Shan-si, and Chihli. The Shan-tung provincials are the most numerous, they form the settled agricultural class of the population; their dialect is spoken in Manchuria, and the influence of their civilization is so great as to prevail throughout the country.

The Shan-si provincials are the roving commercial class, they are the bankers, merchants, tradesmen, and pawnbrokers. They are remarkable for their wonderful aptitude in acquiring languages, so that in all their dealings with the tribes of Manchuria—as with the Russians at Kiachta—they speak the language of their customers, pronouncing the words with peculiar grimaces; the only language which they discard as useless to them in their business is the Manchu, which bids fair to become obsolete at no distant time.

The villages of Siau-heli-shan (black hillock) and Hu-kia-wo-pu, and the hamlet of Ban-la-men, only remarkable for the marsh which lies across the chief street, were successively passed. The abominable state of the roads, never mended or cared for, with deep ruts into which the wheels of the Chinese carts sink up to the axle-trees, and full of quagmires in which the poor horses struggle for hours up to their bellies in mud, excites lively protests from the Archimandrite at the apathy

and superstition of a people who consider that bad roads are evils no more to be avoided than a gale of wind, a flood, or a drought. It happens not unfrequently that after toiling for hours over an execrable road, a beautifully made bridge is passed near some insignificant hamlet, with its marble slab and inscription, commemorating the gift of some generous donor whose munificence is little appreciated by the ungrateful traveller.

The low sandy ground was sown with marsh rice (*bai-tsi*), the grain of which is used as food for cattle, while the straw serves for thatching the houses. The villages of *Siau-pei-ki-pu* and *Ta-pei-ki-pu* (Little and Great White Standard) are now passed; the population in this district is partially composed of military Manchu settlers, who have been here for some time, as *Chu-fang*—i.e. garrison troops—and whose organization is exactly similar to that of the Manchu troops in Peking, although they are distinguished from the latter by superior industry and energy; their military and civil chief is the Viceroy *Tsiang-tsiun*. All their settlements are well provided with schools for the education of the young. Soon after leaving *Ta-pei-ki-pu* the large settlement of *Sin-min-tun* (new peasants' colony) is passed; this place is almost a town in size, and is ruled by its own governor or *Tung-chi*; the trade is enormous, and the notes of its banks are as current as those of Mukden.

The *Liau-ho* River was for centuries the military frontier of China; on its right bank, near the ferry, stands the fortress of *Kin-liu-ho*, so called after the ancient name of the river; and now garrisoned by troops commanded by a Manchu officer. The river is wide, and has an average depth of 10 feet, small trading junks ascend it, but the navigation is difficult, and only practicable for larger craft at high water, the trade between Mukden and Newchwang being chiefly carried on carts and pack-animals. After crossing the river on a raft, by means of a rope stretched across from bank to bank, the travellers entered the *Liau-tung*—i.e. country east of the *Liau-ho*—which excited their admiration. The level plain is varied with plantations of willows and poplars, now marking the boundaries of fields and homesteads, now casting a welcome shade over some burial-place, now clustered in groves round a temple, and frequently planted in splendid avenues along the imperial highway to Mukden.

A fine stone bridge is crossed at the village of *Ta-shi-kiau* (great stone bridge), and the pagoda of *Ta-wan* lies to the left. A conspicuous object in the distance is the lama temple of *Pau-shen-si* to the west of Mukden, shaded by a thick grove of trees. This temple was built in 1638 by the second Khan of

the Manchu House, thirteen years after the removal of his residence from Hetu-ala [Sing-king, or the capital of the manifestation (of the dynasty)] to the city of Shing-yang, afterwards named Mukden [in Chinese, Shing-king, *i.e.* the metropolis of prosperity (of the dynasty)], to receive the idol Makha-Hala, the defender of the faith. This idol was cast during the time of Kublai Khan, by the celebrated Pakbalama, for the temple of the hill, Wu-tai-shan, whence it was removed to the north of Mongolia; Khutukhta Siarbà brought it to the Khan of Chakhar Lin-dàn. When the Manchu invaders conquered the land of the Chakhars, a lama of the name of Morgen presented the idol to the Manchu Khan. It was carried into Mukden with great ceremony, and a building worthy to contain it was forthwith commenced. A large quantity of gold and silver was lavished on the decoration of the temple. Such is its history inscribed in four languages on a monument in the temple. The Khans of Manchuria from the first showed a sympathy for lama Buddhism, and placed one of the Buddhist divinities near their new residence to protect it; this god is represented as a terrible black giant. At Peking there is another Buddhist saint, the sandal-wood idol of Buddha, made, so it is said, during his lifetime. Temples, cemeteries, and gardens, surround Mukden; the city lies in an open plain of a clayey soil, bare of trees and seamed with ravines, and is like Peking on a smaller scale. The outer wall is made of mud, with plain gates, and without towers; the inner wall is built of bricks, and has towers and ramparts. The streets are regularly laid out, well paved and full of shops. The trade is large as the trade routes from Newchwang, China proper, Corea, Inner Manchuria and Eastern Mongolia converge here. Among the special objects offered for sale at the shops are furs (although the best sables from the district of the Goldi are now taken to Russia), ginseng, and articles in nephrite. The tradespeople are chiefly from the province of Shan-si and from Yung-ping-fu. The fuel used at Mukden is an inferior kind of mineral coal, quarried in the Po-si-hu Mountains, some distance south-east of Mukden. The Hun-ho, a tributary of the Liao-ho River, flows on the south side of the city.

The name of Mukden* is never applied to that city by the inhabitants of Manchuria: the official names are Shing-king and Fung-tien, the latter of which means seat of government, but the vulgar name is simply King, or capital city. Its old name of Shin-yang is in general use with the mercantile and lower classes. The cities of Mukden and Sing-king are held sacred owing to the tombs of the first Manchu khans being

* See Fleming's 'Travels on Horseback in Manchu Tartary.'

situated near them. Till the beginning of the present century, the Bogdo-khans considered it to be their sacred duty to visit at least once during their lives the tombs of their ancestors; but since the reign of Kia-king, these visits have been discontinued, a circumstance which may account for the neglected state of the roads and bridges, which have been allowed to fall into decay, the ditches on either side of the road to be choked up with grass and weeds, and the trees cut down, or otherwise destroyed. Owing to the number of Chinese in the province of Mukden, and the superior advantages which the district offers to settlers, high courts of law are established, just like those of Peking, with the exception of the court of Chins.

The direct trade-route to Tsi-tsi-har and Aikhun is directed through the willow fence at the Pass of Fa-kwho-nun, and passes through the nomad districts of Kortsin and Korlos, and the Chinese agricultural settlements of Chang-tu and Chang-chun (Kwan-cheng-tszu); but our travellers preferred adhering to their original plan of travelling by way of Girin, although uncertain if conveyances could be hired from the last-named place to Aikhun.

Leaving Mukden by the eastern gate, the travellers continued their journey northwards. Soon after passing the outer wall, the road ascends a clayey hill, Tu-hang-tszu, with a handsome temple on its southern side, dedicated to the warrior and patriot Hwan-ti, who, under the name of Hwan-yni, distinguished himself during the civil wars of the 3rd century in China, when he fought and fell in the legitimate cause of the Khans; his memory is still revered in China, and his heroism is rewarded by being deified under the title of Hwan-ti. The first halt was made at Ta-wa (great hollow), where one of the blind troubadours who are so frequently met with in these inns, sang ditties expressive of good wishes to the travellers, accompanying his song with a guitar. The road lay across the spurs of the eastern range of mountains, now and then descending into the plain of the Liau-tung. The Manchu settlement of Tsing-shi-tai is soon passed, the country appearing to be deserted after the busy life of Mukden and its neighbourhood; plantations of trees are rare, although the spruce fir may occasionally be seen. There is a curious superstition observed in Manchuria on sending the bodies of the deceased back to China. A supply of tickets is obtained from the temple, Cheng-whang-mian (the penates of the town) in which the deceased lived, and one of these tickets is burnt on passing a barrier or crossing a river in order to propitiate the good genius, and

ensure free passage for the spirit of the dead, which, according to their belief, follows the body.

From the summit of Hama-ling a fine view is obtained of a range of mountains to the north, with a beautiful valley intervening. The station of Eh-lu, or I-lu, situated between two branches of the range, is said to occupy the site of an ancient town, Eh-lu-hien, called after some ancient inhabitants of Manchuria, the Eh-lu (Yih-low); it is now colonised by Chinese immigrants from Shan-tung, who left their own country, and settled here when the irruption of the Manchus into China opened the road to immigrants from that country, and opportunely relieved them from the effects of a bad harvest and superabundant population. The settlement of Eh-lu is very large, one end of it abutting on the pass.

The next place is Fa-cha-tun, situated on the level ground at the foot of the hills; these tuns, or settlements, are colonised by military agricultural Manchus of the old stock (Fo-Manchu), who settled here when the Manchu regiments were increased; they lie both within and without the willow palisades. The town of Tie-ling-hien is scattered over a large extent of ground near a long ridge of high land (Tie-ling), which overshadows the town. It is entered by a fine level road, through a graceful stone archway. This town is the Birmingham and Sheffield of Manchuria. The clashing blows of hammer on anvil, and creaking bellows, resound on all sides, as the sturdy smiths ply their work, while crowds of country-folk surge hither and thither in the lurid glow of the blazing furnaces. The iron is obtained from the Tie-ling, i.e. iron range.

The 16th May being the 28th day of the fourth moon, is dedicated to Nian-nian-nian, the female divinity of Tie-ling; the roads were thronged by female votaries in holiday dresses on their way from the neighbouring villages to pay their respects at her shrine. Apart from its importance as a seat of manufacture, Tie-ling possesses an historical interest, owing to the fact of its having originated the feud between China and Corea, which terminated in the downfall of the Gau-li (Corean) dynasty, and the rise of the present dynasty of Chao-sian. The Corean house of Gau-li traced its descent from the ancient Gau-gon-li, and therefore claimed relationship with the princes of Po-hai, asserting its right to the whole of the Liao-tung territory; these pretensions led to the war which, as we have remarked, resulted in the overthrow of the Corean power. A little village 10 li north of Tie-ling, called Gau-li-chan (Corean), is a humble monument of a once powerful empire.

Chung-hu and Sha-ho are two villages lying next on the

road, which soon ascends an elevated plain, on which the settlement of Sun-kia-tun is situated, where the travellers halted to rest. All these hills are of a red clayey soil, bare of trees, with gentle slopes, covered with verdure, which contrasts with the red fissures in their sides. Kai-yuan-hien, on the Tsing-ho, lies to the left of the road. The upper course of this stream (*i.e.* the Tsing-ho) flows past the fortress of Hata, once inhabited by a people of that name. The fortress of Kai-yuan-hien was of great importance during the reign of the Ming emperors, when it served to maintain their supremacy over the Mongol tribe of Uriankha, on the one side, and the Churchi, also called Khaishi, on the other. During the rule of the Mongol dynasty in China, Kai-yuan-hien was the centre of government for the whole north-east of Manchuria. The scenery along this part of the road is very pretty; beautiful streams meander through the well-cultivated land. The village of Kin-sheh (*i.e.* ninth commune, or village of settlers) is situated close to the willow palisades, which are considered to be the boundary between the provinces of Mukden and Girin. These far-famed palisades (Lui-tian-bian, *i.e.* frontier of willow fencing, or Lui-bian "willow frontier") may safely be erased from our maps, as no such fencing is now to be seen; trees there certainly are on some of the hills, but they are not uncommon beyond the boundary. Some slight elevations like mounds are here and there noticed, but whether these are the remains of the fence or not it would be difficult to determine. According to a Chinese eyewitness, more than a century ago the fence consisted of stakes from 2 to 4 feet high placed crossways so as to form a trelliswork; another writer affirms that these stakes had grown into trees, but trees are plentiful on these hills, and it would be impossible to say which are artificially planted. Wei-yuan-pu-men, *i.e.* the gate of Wei-yuan-pu, as the village is called, is a plain gate leading through a mud wall, which is continued for a short distance to the right and left of it, and is flanked by a guard-house inhabited by a few soldiers, whose duty consists in examining the passports of travellers and reporting their names to the superior authorities.

The travellers now entered the province of Girin by a valley closed on the left by some wooded hills. Their first halt was at the village of Miao-lwa-kiai (street of cotton), a name given it by the Shan-tung immigrants, who discarded its original Manchian name of Mongu-kholo (Mongol valley). The road follows for some distance a beautiful valley, watered by a bright stream, with a chain of smooth even hills to the left, so even as to appear artificially levelled, with steep triangular descents into the valley, well clothed with underwood. At the

wood of Yang-shu-ling-tsze (poplar-wood) another custom-house is passed.*

The road now passes over some bad morasses, which are bridged over with boughs forming an uncertain footing for the mules. To the left of the valley stands a ruined fortress, with a winding staircase leading to its summit. Passing the fortress of Eh-heh-khotan, the former residence of a prince (beh-leh) of a Manchu tribe called Eh-heh, the road approaches the station of Eh-heh (I-heh). The sides of the fortress measure 50 to 70 fathoms in length, and are 2 fathoms high; its shape is that of a parallelogram, with rounded corners. This fortress was evidently not the work of Chinese hands. It is said there are 30 of these fortresses in the province of Girin, but if this number include the fortresses of the Ussuri district, central Manchuria would have too few traces left for its share of its ancient warlike inhabitants.

Where are the 80 towns of the Po-hai sovereignty in Manchuria? The interior of the country has evidently been little explored, and is little known. With reference to the assertion made by Chinese geographers, that all the fortresses in the Girin district were formerly the residences of different princes (Beh-leh) of the Manchu race, it is too presumptuous to be credited.

The travellers passed the night at the station of Eh-heh, which is surrounded by hills of considerable height and is inhabited by Shan-tung settlers.

The hills over which the road passes in the next stage, formed the boundary, from a remote period, between Manchuria proper and the country of the Liau-tung and Liau-si, in which China ever sought to establish her empire. The boundary-line on the east followed the spurs of the Chang-pō-shan Mountains; on the west it extended from the River Liau-ho, along a ridge of the Hing-an Mountains. The Emperor Kanghi built willow palisades along this line, in order to enclose the ancestral tombs of his dynasty; he then made a separate branch from the north-east corner to protect the hunting-grounds. In this long extent of fencing, which encloses an entire country, there are twenty passes called gates, at each of which there is a guard-house and station. In the times of Kanghi, when the districts beyond the willow-fence were not under the influence of settled life and a regular form of government, and were almost unknown to the Manchus—at a time, too, when the Eleuths disturbed the whole of Mongolia and even threatened the birthplace of the Manchu dynasty—the idea of constructing a barrier as a

* According to the Chinese atlas the barrier is further north.

protection against possible invasions, seemed natural enough: but it does seem strange that a wise ruler like Kaughi should have allowed himself to be carried away by the prevailing passion in the East for interminably long barriers, when experience had proved their futility and worthlessness, compared with the gigantic efforts required to construct them. Such barriers were merely imaginary frontier-lines, which were extremely difficult to defend in time of war. The Chinese of old, in their disputes with their neighbours, first liked to mark out a boundary-line just as jugglers describe a magic circle on the ground before commencing their tricks. The example set by the Chinese was imitated by their neighbours, who built walls, dug ditches, and constructed fences, as a protection against one another—the Koreans against the Churchi, the Churchi against the Koreans; the Kins against the Mongol tribes, and finally, the distant Japanese against the Aino.

The town of Kho-shan-ling (burnt hill), so called from the bright saffron-colour of the clay in the valley, was crowded with holiday-makers, keeping the festival of the first day of the fifth moon. The temples dedicated to Lau-ye and Niang-niang (god and goddess) were open; a theatre was erected and crowds of ladies and gentlemen honoured the occasion with their presence.

After fording across a tolerably deep stream, the Hersu, near a village of that name, and passing over a hill, on the summit of which were traces of an oval-shaped fortress, the travellers descended to the little village of Siau-hu-shan (little solitary hill), a prettily-wooded hill standing alone in the plain, surrounded by a wall and crowned with a temple. Many of the inhabitants of this and the adjacent villages are Mohammedians, who have their mosques. Horse-robbers infest the hills, plundering the caravans of opium and relieving travellers of their money. It was curious to notice how universal the use of tobacco* had become in the province of Girin; males and females of all ages are smokers. The infant hardly able to walk has a pipe, and the first thing a parent teaches a child is how to smoke; every urehin carries his pipe and tobacco-pouch attached to his belt. Opium smoking, however, is not so common among the poorer classes as it is in China, and is rather a luxury only accessible to those who are well off. A road branches off to the left to Kwan-cheng-tsze, a large trading city on the borders of Eastern Mongolia. The Girin road now passes the village of Yi-tung on the Yi-tung-ho River, a left tributary of the Girin-ula (Sungari).

* Tobacco was introduced into Corea from Japan about 270 years ago; from Corea it came to Manchuria, and the present Manchu dynasty introduced it into China in 1664. The Girin tobacco is highly esteemed, and is known all over the empire under the name of Manchu leaves (Kwan-tung-yeh-tzi).

The ridge of high land which separates this stream from the Tung-liau-ho (Eastern Liau-ho) is only 30 miles in breadth; the river-system of the Amur is, therefore, only separated from that of the Liau-ho (southern Manchuria) by this short distance; and the Chinese Government at one time actually contemplated sending supplies by this river-way for their troops engaged in attacking Albasin,* and the Russian settlements on the Amur during the reign of Kanghi.† The peace of Nertchinsk, however, intervened, and no actual trial was made of this route. The shallows which have formed in the Liau-ho make it doubtful if this river-way would now be practicable, even for vessels of light draught.

The nearer to Girin, the more populous and animated are the villages. On the 21st May they halted at the flourishing village of Illitsi (or Illusi and Illatsi), in a finely wooded hilly country; it was market-day, and the village was crowded with country-folk. The innkeeper was a Manchu of tall figure and commanding presence, with regular, handsome features; several such specimens of the race had been already seen by our travellers, who formed the opinion that they were types of the original stock, who had preserved the best qualities of their race in the depths of Manchuria. "Judging from these splendid natives of the valleys of the Chang-pō-shan, it was difficult to trace their connection with the people to whom we have given the name of Tunguss, for the sake of ethnographical classification. On studying the early history of the Manchus, we are particularly struck with the castes which form so leading a feature of their social relations; on the one side are the lords and the warriors, on the other, the slaves and the servants—all of one origin. Serfdom was introduced into Corea by the first colony from the Bukhian Mountains (Chang-pō-shan), and was doubtless derived from the same source as that of the colonies who migrated from the banks of the Sungari to the same Corea. Feudalism and serfdom were fully developed in the Fu-yui race, who were the first in Manchuria to emerge from a semi-barbarous state, and to assume the external forms of political organization. Were these Hia, Khia, or Kia, a privileged caste of the tribe, or were they conquering invaders? is the question to decide first, before dealing with the ethnography of the races who settled in Manchuria. If it be necessary to assign one common origin for all the tribes of this country,

* Albasin, on the Upper Amur, was founded by the Russians in 1669; besieged and taken by the Chinese army in 1685; reoccupied by the Russians, and besieged a second time by the Chinese in 1686-7; peace of Nertchinsk concluded in 1689. See Ravenstein's 'Russians on the Amur.'

† Kanghi, the greatest of the Manchu emperors, ascended the throne of China in 1662.

history points to the Su-shin,* who, as aborigines, have the undeniable right to be considered the common ancestors of the tribes of Manchuria, far more than their scattered and degraded offshoots. It is remarkable that the Peking historical committee during the last century should have traced in the names Su-shin and Chaosian, corrupt forms of the name *Churchi*, and, therefore, gave them an important tribal significance in the widest sense. Although the committee caused some historical confusion by their arbitrary manner of dealing with the nomenclature of the people themselves, it was in this instance, in my opinion," says the learned Archimandrite, "not far wrong."

On the 22nd May, the travellers entered the chain of mountains which border the Girin-ula Valley on the south side. The road followed ravines and defiles of great beauty, a murmuring brook sped noisily down the valley, the single note of the goldfinch broke the stillness of the copses, wreaths of smoke curled up here and there from the homesteads, and everything betokened peace and stillness in these happy retreats.

The summit of the pass was steep and rugged; thick woods grew on either side of the road, and springs of water forced their way through the surface of the ground. A beautiful temple stands on the summit of the pass, dedicated to Hwan-ti or Lau-ye; after whom the range derives its name of Lau-ye-ling. The descent from the pass is equally difficult and picturesque. The road then enters a valley, in which the little village of Err-tau-ling (division between two ranges) is situated. Two more passes have then to be crossed (on one of which is the custom-house), before Girin is seen situated in a wide and well-wooded plain, with a great mountain-range behind it; part of the Girin-ula valley extending to the right of the landscape. Near this point of view should be the Sacrificial Hill (Van-tsz-shan, in Manchu Ven-deh-kheh), where, in spring and autumn, sacrifices are offered up to the Chang-yō-shan Mountains. The principal group of the great range is 1300 li (470 miles) from Girin, according to Chinese geographers. The Girin chain is a branch of the main range. The sacred importance of the White Mountains has been recognised in the far East for ages. They are first heard of under the name of Bukhian-shan; a name not of Chinese origin, but reminding one of the Mongol Burkhan, as the Gentehi Mountains in Mongolia (according to some, Khan-ola at Urga) were called in ancient times. Formerly there was greater similarity between the Mongol and Manchu languages than at present. The actual name of

* In the 11th century B.C. the Manchus first appeared at the court of the Chow (Tchou) dynasty to present tribute, under the name of *Suh-tchin*. See Meadows on the history of the Manchus, Williamson's 'North China.'

Chang-pō-shan (long white mountains), was given them during the Kin or Churchi dynasty; before which time they were generally called Tai-pō-shan (great white mountains), or simply Pō-shan; and under this name were known for ages to the Coreans. Both ancient and modern writers describe these mountains to be unwooded, with flora mostly white, and white-haired fauna, never injuring, or injured by, man. During the Kin dynasty they were reputed to be the abode of the merciful Poi-hwan-in, *i. e.* the white-robed Hwan-in, who is represented as a woman bearing a child in her arms. The word Poi, white-robed, is in this instance only a play on words; it is applied to Hwan-in in the sense of a lay-divinity (lay-priests were called white-robed, in contradistinction to the monks), and not to express a symbolical white colour as the peculiar attribute of the deity. At that period, *i. e.* during the Kin dynasty, there was a temple in Corea dedicated to the spirit of the Chang-pō-shan Mountains (symbolized as a maiden), and presided over by a shamanka, or sorceress. The Corean Buddhists assigned the Chang-pō-shan as the home of their miraculous deity Manchushri. And here we are reminded of the legend of the name of the Manchu dynasty having been derived from this deity. The similarity between the names must, however, be accidental, as the word Manchiu occurs in the nomenclature of the Churchi long before the time of the Manchu Tai-tszù. All the pathetic descriptions of the Chang-pō-shan Mountains refer altogether to their principal peaks or group of peaks, and convey no accurate information about the physical character of the range; indeed they seem hardly reliable, and the only information to be derived from them is, that at a considerable altitude in the main group of the range, there is a lake surrounded on three sides by naked rocks, which rise to a height of 2500 feet (760 metres) above its surface. The dimensions of the lake are given differently by the several authors; according to some it is 80 li in circumference, others say 40, and some only 25 li. Vu-tchjao-têhu, in his verses on the Chang-pō-shan, describes the lake to be 5 li in breadth and 8 in length, and in shape like a pig's kidneys. According to the description given of it, this depression in the mountains is probably the crater of an extinct volcano sloping towards the south. With regard to the whiteness of the Chang-pō-shan, it is difficult to decide whether it is caused by perpetual snows, or by the white limestone rock which was quarried in the Corean spurs of the range. Besides the Girin branch of the Chang-pō-shan, another range extends to the south-west, along the west side of the Yalu-kiang River as far as its confluence with the Tunga-kiang.

The approach to Girin was not delightful. A row of trees to

the right of the road presented a ghastly sight; from each tree there swung a cage, containing a human head; some of the heads had been lately severed from the bodies, and fresh blood trickled through the bars of the cage; others were in a state of more or less advanced putrefaction; and in some nothing remained but the skull and a few tufts of hair. These were the heads of robbers, chiefly Mohammedans, whose acts of violence disturbed the province of Girin—the Viceroy of Girin and Tsitsihar are empowered to pass capital sentence on criminals without reference to Peking. Immediately after this hideous avenue another gloomy spectacle awaited the travellers. A wide plain was thickly covered with open coffins, containing the dead bodies of Chinese emigrants, whose corpses are exposed in order that relatives or friends of the deceased may have the opportunity of identifying them and transporting them to their homes. If ten years elapse before any corpse is claimed for removal, it is buried on the spot where it has lain. The Russian travellers turned from these gloomy sights with heavy hearts and sickening senses as they entered the city of Girin,* capital of Central Manchuria.

Girin—or Chuen-chang, *i.e.* naval yard—owes its existence to the war between the Manchus and the Eleuths, in the times of Kanghi, and to the disputes with the Russians about Albasin (Upper Amur). The former military centre of government was at Ninguta, but owing to the war it was transferred to the village of Girin-ula (called after the river of that name). Kanghi apprehending an invasion of the Eleuths into Manchuria, surveyed the roads and measured the distances between Mukden, Girin, Mergen, and the Soyurtszi Mountains, forming the boundary of Mongolia; he established lines of pickets and post stations along these roads, and built a dockyard at Girin to construct lighters for the transport of supplies and provisions to his troops. Some old ship's timbers were found which proved that in early days this place had been the site of a naval yard, when the forests in the immediate vicinity furnished abundance of timber suitable for ship-building; now, however, this timber is to be found only in the distant Votszi (forests), whence it is rafted by water to Girin. The Sungari is called the Girin-ula, or sometimes simply Ula or Kiang (river); the depth of the river, owing to a prolonged drought, was only breast high opposite the city. The population of Girin has been exaggerated, for it is far less populous and flourishing than Mukden. In 1812 the population of both sexes was estimated at 300,000 (exclusive of the native tribes). No later returns

* For further description of Girin read Williamson's 'North China,' &c.

are published; and probably this census was taken during the winter months, when large numbers of traders visited the city. The staple article of commerce is leaf tobacco, another important product was formerly the root, gin-seng,* a highly-prized *article de luxe*. The search for this root was superintended by the Manchu bannermen, who supplied it to the court and the princes; now, however, the supply is exhausted in the province of Girin, and it is procured by the Chinese in the country east of the Ussuri. The trade in gold, found in the northern spurs of the Chang-pō-shan Mountains, although contraband and punishable by law, is extensively carried on by the Tszü-fehi (*golden goldminers*), whose organized bands completely defy the vigilance of the Girin officials. Among the other produce of the province of Girin, are bears' paws (hiung-chang), esteemed as a delicacy by gourmets, and bears' gall (hiung-dan), useful in medicine; the Girin bear is of enormous size and strength. Before the Russian annexation of the country of the Ussuri, Girin supplied Peking with sable skins, which were collected as tribute from the following tribes: the Hetch-yeh, commonly called Kétsin (Goldi); Fiaka (Giliaks); Killér (Amgun Tungusses); Kuyeli (Aino); Orontcho (Orotchon); and Kiakala (Dazi). Now there only remains in the province of Girin, the West Ussuri Goldi and the Sansing tribe (probably the Nehlkans). In losing part of its territory, the province of Girin acquired special importance from its new conterminous relations with Russia.

The travellers left Girin on the 24th May, and crossed a spur of the Chang-pō-shan Mountains, extending in an easterly direction, and obliging the river to make a great bend in its course; from the summit of the pass there is a fine view of Girin and the mountains which surround it. Here stands the chateau of the Viceroy of Girin; descending to the plain in which lies the village of Kiù-chan (old station), the road approaches the river which is crossed by a ferry, and follows the right bank of the Girin-ula. An old fortress, said to be the ancient residence of the governors of this country, stands on the Ta-seng-ula (in Manchu, Butkha-ula†), signifying hunter's river, now called Ulagai, a tributary of the Girin-ula, famous for the pearls which are found in its stream, and which formerly supplied the court of Peking. Another stream, the Si-la-ho, was forded, and the invisible Girin willow palisades passed by the travellers at the pass of Fat-hah-mun, where there is a custom-house, and duty is levied on wine, salt, and pigs. The travellers halted for the night of the 26th May at the

* For full description of this root see Maksimoff's 'Travels on the Amur and Ussuri in 1860-61.'

† From *butamb*, to hunt.

station of *Seh-shui-tien-tsz*, near a large morass, which gave its name to a village inhabited by *Shan-tung* settlers. This station is 5 li distant from the *Girin-ula* and to the left of the line of the military agricultural settlements (*Gashan* in *Manchu*, *tun* and *tsum* in Chinese), which extend to *Larin* and *A-she-hoh*, from which line the Expedition now diverged. The right bank of the *Girin-ula* is hilly, presenting a pleasing outline, and covered with luxuriant vegetation; rivulets frequently cross the road; farms and cottages adorn the slopes of the hills; the fields are covered with wild flowers which fill the air with their fragrance, and the notes of the goldfinch (*hwang-kiau*, i.e. yellow bird) and the cuckoo break the silence of the woods.

From the village of *Kala-ho-tsz* (black rivulet) northwards as far as *Mergen* on the *Nonni* the cattle plague had made great havoc among the cows, and the bones of these animals strewed the road in several places, and lay in heaps near the houses. The Mongolian names of many of the villages and stations along the road, the herds of horses grazing near the post stations, and an occasional flock of sheep reminded the travellers of their approach to nomad districts.

Mongu-chan (Mongolian), *Guyui-shu* (solitary elm), *Tolai-chan* (hare station), *San-kin-tsz* (three houses), *Wu-kin-tsz* (five houses), and the colony of *Wan-fa-tun*, were successively passed, as they continued their journey towards *Petuna*, along a road bordered by cultivated fields and pasture land.

The town of *Petuna* is only one march distant from the station of *Ta-seng-tien*. *Petuna*, generally called *Sin-chung* (new town) to distinguish it from the old and now deserted town, is situated in a level uninteresting plain; the old town of *Fo-Petuna*, formerly called *Narahun*, and the site of an ancient fortress, is 25 li distant by the road.

The 30th May (13th day of the 5th moon) found the *Archimandrite* at *Petuna* in time to witness the celebration of the *Mo-tau* (sharpening of the sword), a great festival held in honour of *Hwan-ti*, who is supposed to sharpen his sword on this day, whence the Chinese attribute such portents in the heavens as thunder, lightning, and rain. Sacrifices are offered up to *Hwan-ti* by officials who supplicate him to grant them promotion in rank. The streets of *Petuna* are poor, and the town is surrounded by a mud-wall; the old fortress and town, *Fo-Petuna* or *Petuna-cheng*, must have been considerably larger than the modern, if we may judge from the ruins which remain. The village, now occupying its site, stands on the edge of a cliff which forms an unbroken, unvarying, natural rampart along the right bank of the *Sungari* as far as the eye

can see, and limits the extent of the low-lying land subject to the river's inundations.

A steep descent leads into this valley, where the rivers Nonni and Girin-ula unite to form the Sungari: here is the boundary between Mongolia and Manchuria. The valley of the river presents a dreary aspect; no human habitations gladden the eye; a few herdsmen may be seen pasturing their horses on the rich succulent grass-meadows. Large lakes, formed by the overflow of the river, are the chief features in the monotonous landscape. Some swampy ground must be crossed before arriving at the ferry of Chuan-Kei. The Sungari is here called Ta-kiang (great river); the crossing of its southern branch, the Girin-ula, occupies only a few minutes, a sandy spit of land separating that river from the Nonni-ula, which expands into a wide sheet of water like a bay or great lake, in which there is no perceptible current. The latter river is called locally Si-kiang (new river), probably owing to the alteration which takes place in its channel; it is also erroneously called Heh-lung-kiang (Amur); in maps it is generally marked as the Nün-kiang. The point of confluence of the two rivers varies according to the height of the water, and the position of the ferry is altered accordingly; formerly it was further south. Three-quarters of an hour were occupied in crossing the wide bay of the Nonni before entering the deep channel, where the majestic river hurries in impetuous course its western waters towards the great reservoir; so swift is the current that the ferrymen do not attempt to stem it, but shape their course somewhat down stream, and before reaching the opposite bank the raft is carried more than a mile below the ferry and station-house of Shui-shu-ying (trees reflected in water). The Nonni-ula is navigable for a great distance, but, owing to the great breadth of its channel, shallows are frequent. In summer, Chinese trading junks ascend the river to a point above Tsitsihar. Why, asks the Archimandrite, should not this river be considered the parent stream of the Sungari instead of the Girin-ula, than which it is both longer and greater in the volume of water brought down? The Expedition now entered the nomad district of Kordòs, ascending the left border of the Nonni Basin, which, like that of Sungari, is girt on either side by the wall-like cliffs. The frequent inundations of the river are marked by the lakes and marshes left by its receding tide. The character of the inhabitants of the country is not nomad-like. The Mongol population live in huts and cottages, and own arable land, which is generally rented to Chinese immigrants: they breed pigs and cattle, employ Chinese labourers, speak Chinese

fluently, and even resemble the Chinese in features. They have horses and oxen, but sheep are rare, and there are no camels. The impressions left by observations made along the roadside may doubtless be modified by those made at greater distances in the interior; but even in the heart of the country Chinese agriculturists are transforming the appearance of the country and the nature of the people. Beyond Mosing or Monhin, where the travellers halted, all the stations along the road are kept by the descendants of the followers of Ussan-gui,* whose ancestors were sent here from their native province of Yunnan after the subjection of Ussan-gui by Kanghi, who gave them land, in return for which he obliged them to maintain the road-stations and to keep a sufficient number of horses to carry mails and passengers free of charge. A similar road system is prevalent throughout China, with this difference, that in other parts of the empire the stations are maintained at government expense. The Yunnan settlers have multiplied, and have established important agricultural colonies in North-Western Manchuria; they are quite distinct from the other Chinese settlers. From Mosing one road leads to Khulan, and another the direct trade-route to Mukden, *via* the Mongol steppes and Fa-kwho-mun Pass. Here is a sketch of a Korlòs peasant girl who overtook our travellers:—"She was mounted on a fleet steed; her dress, a blue wide-sleeved tunic, was gathered round the waist with a belt; her hair was confined in a kind of helmet and covered with a white cloth, which fluttered in the wind; her bold fearless eyes glanced into each of our carts as she galloped past: this dress was unlike that of other Mongols." The station of Si-chan (new)—in Mongolian Ulanoi, a name derived from the lake in its vicinity—was the next resting-place. The depressions in the undulating steppes are filled in

* Upon the usurpation of the throne of China by Li-khuan, the Prince Ussan-gui (Vii Sangqueii) raised a revolt in the province of Lian-tung, and, after defeating the usurper, made himself master of Pekin. Leaving his Tartar ally Tson-ti as regent at Pekin, Ussan-gui proceeded to complete his conquest of China. Upon returning to Pekin, he found that Tson-ti had proclaimed himself Emperor. Yielding to circumstances, he became the ally of the usurper and his connexion by marriage, and was created Prince of Yunnan. His ambition was not satisfied with this title; and soon afterwards he rose in rebellion, declaring himself Emperor under the title of Vii Sangqueii, and succeeded in conquering half of China, dying at an advanced age.

Upon his death, dissensions arose among his three sons, who, notwithstanding their relationship with the Emperor, were put to death, and their followers dispersed. The rebellion was finally crushed by the Emperor Kanghi, grandson of Tson-ti, who ascended the throne of China in 1662, at the age of 8 years. This prince, although merciful and clement, complied with the laws of China, which extends the punishment of rebels to the ninth generation, and condemned the descendants of Ussan-gui and his followers to death in some cases and banishment in others. (See Yabrandt Ides' 'Embassy from Muscovy to China in 1692-5.')

with lakes and swamps; the soil is clayey, and when dried is covered with a saline incrustation. This district of the province of Tsitsihar is reputed for the fertility of its soil and its salubrious climate.

On the 1st June the Expedition halted at the station of Guli or Gurū, where there is a Chinese school numbering 15 pupils, who are taught the four books of Confucius and the Book of Ceremonies. The children are remarkable for their self-possession and easy manners in the presence of strangers. Chinese civilization is held in such respect by the natives, that they become insensibly imbued with the ideas and opinions of the Celestials, who serve as their models in everything. It is evident that at no distant period the Mongol will become Mantszi, as the Chinese are called in Manchuria. The policy adopted by the government tends to promote this change. In establishing colonies of Chinese agricultural settlers in Manchuria and the adjacent nomad districts of Chang-tu (Kortsin) and Chang-chun (Korlōs), they seek to secure peace in the country and safety to its borders. The enterprising, energetic Shan-tung settler and the wily Shan-si trader are not slow to take advantage of such favourable circumstances. The former, by paying considerable sums in advance for rent of land (the law forbids the sale of lands to Chinese in the nomad districts), gradually converts his leasehold into a freehold; the latter takes advantage of the careless unsuspicious nature of his customers, and allows them to become his debtors, when he seizes their property and holds it as security for repayment. Thus the Manchus are themselves the first to undermine their dynastic independence in their own country. The road continues to skirt the low-lying basin of the Nonni, passing large lakes and swamps. Continued dry weather favoured the travellers, as the road would hardly have been passable after rain; reports reached them of a complete interruption in the communications for wheeled conveyances between Bukui (Tsitsihar) and Mergen.

The houses of the Mantszi or Chinese colonists present a neat appearance with their well-kept vegetable-gardens. As the travellers approached Tsitsihar they noticed settlements of Chinese exiles (Lokha), whose sentence had been commuted, and who had preferred to remain in Manchuria rather than return to China; they pay taxes in corn to the government. Their settlements are called Huan-ti (government allotments); these settlers are very exclusive, and intermarry among themselves. The houses of the Chinese settlers are adorned with pictures representing Chinese dramas, but the invariable and most prominent images in every house are those of Lau-yeh

and Tsai-shin (the gods of wealth). The boats on the Nonni are hollowed out of single trees, and also serve as drinking-troughs for cattle. The houses are built of cubes of clay, which harden by exposure into a solid mass. Soon after passing the villages of Lesser and Greater U-hu-ma the graceful temples of Tsitsihar are visible, situated in a well-cultivated plain and sheltered by plantations of trees.

“Tsitsihar is the chief penal settlement for the worst kind of criminals. Its Mohammedan population is large, and divided into two distinct classes, occupying separate quarters of the city, and called respectively Tung-hwui and Si-hwui—eastern and western. They have their separate mosques, and hold no intercourse with each other. The former are settlers from China, and are notorious for their bad character; the latter are exiles, and are well behaved. Acts of robbery and violence are of frequent occurrence at Tsitsihar, and the governor patrols the streets at night to keep order. The duties of the governor of Tsitsihar are of an onerous nature. He has to manage the Butkhans, who are the professed trappers and hunters of the different tribes inhabiting Northern Manchuria; attend to the frontier relations with Russia, and guard the convicts, who give him a great deal of trouble. They include pirates, insurgents, members of dangerous religious sects and secret political societies, the most desperate robbers and abandoned villains, forgers, appropriators of government moneys, illegitimate relatives of the Bogdo Khan and court attendants. They number upwards of 3000 in Tsitsihar, where the only control exercised over them is to count them once a month. They are neither confined in dungeons nor guarded by soldiers. The severity of the sentence is proportioned to the nature of the offence; some families are banished for four or five generations; the severest sentence is banishment for a long term, or for ever, coupled with servitude to the Solone and Dahur cavalry soldiers in the government service.

“The total military force available in case of unforeseen disturbances can be estimated at 30,000 families, exclusive of the Butkhans; besides which, the governor of Tsitsihar may requisition troops from the province of Girin in case of necessity. Direct communications with Peking are kept up by couriers mounted on relays of fleet horses, stationed along the road through Mongolia *via* Si-fin-kou. A courier from Tsitsihar can deliver despatches at the court of Peking in three or four days. This service is admirably organized; the horsemen employed in bearing these despatches ride at full speed over any roads and in any weather, and frequently dispense with a saddle.

“One of the most interesting features of the life at Tsitsi-

har is the annual gathering (Tchulkhan) of the Butkhans in June and July. They are accompanied by their Ukhorida, or government commissioner, and encamp outside the town. The tribute of 5500 sable-skins is first levied, after which the governor presents them with money, corn, and clothing. When these ceremonies are terminated, a great fair is held, at which furs and cattle are bartered and sold. The Chinese merchants take an important share in these fairs."

The country beyond Tsitsihar is a boundless rolling plain with lakes here and there, and dotted with military settlements (tuns), surrounded by trees, and containing buildings made after one model, and inhabited by Solones and Dahurs. These settlements are sparsely scattered over the great plain. A feeling of desolation oppressed the travellers, accustomed to the noisy stirring life of the Chinese cities and towns, as they made slow, wearisome progress over the swamps and across the many obstacles with which the treacherous Nonni, with its many channels, besets the road.

The farm-houses in this part of the country were inhabited by new Manchus, who are simple, honest people; they cultivate the soil, rear cattle, keep oxen, and sow both kinds of millet; they pay no taxes, and are well off; they speak Manchu among themselves, but also know Chinese, and their children are sent to Chinese schools. They seemed to have entirely forgotten their origin. They were formerly scattered tribes, without a common head, inhabiting the east of the present province of Girin; even to the present day their families of Gualchia and Gualgia are descended from the tribes who founded the present dynasty of Tai-tzu, and who, after emigrating from the Ussuri country, became part of the Manchu race, under the name of Itchi Mantchjoû (New Manchus). These Itchi Mantchjoû included also the Ilan khala (three tribes), who inhabited the shores of the Hurka and Sungari rivers, and were called the "wild men of the woods" (vo-tszi-la-tszi). It is asserted that the New Manchus form eight-tenths of the Manchu population in the province of Tsitsihar. They are divided into eight divisions or banners. Before arriving at the station of Ninnian the road lies along the bank of a channel of the Nonni, and is hard and excellent.

Among the curious superstitions prevalent among the people in this part of the country is the worship of the image of Cheng-hian-lau-yeh, who is depicted as a Chinese gentleman drawing a crossbow at the constellation of the black dog, which is considered hurtful to children, upon whom it brings maladies of all kinds. Cheng-hian-lau-yeh is worshipped as the tutelary divinity of children, and his shrine is found in all the dwellings

in this district. The shamanka, or sorceress, is supposed to possess the power of exorcising the evil spirit, or little black dog, which is visible to her alone. Swallows are respected by the people. These birds build their nests inside the houses, and may be seen flying in and out of the windows at all hours with perfect impunity.

The Solones are bad agriculturists. A few cows and horses are pastured on the treeless plains. The inhabitants are wild and uncouth in appearance, with bloated, ill-looking faces, although the boys' features are well cut and regular. At the station of Lakha the Finde boshko (military official of low grade) was a Dahnur; he was sent by the amban (governor) of Mergen to escort the travellers to that town. Lakha is a large settlement, with good stores and pawnbrokers' shops kept by Shan-si merchants. On leaving this station considerable hills were observed to the west of the Nonni; the land was partially cultivated; the road entered a valley where no living creature was to be seen; no houses, no trees, no cattle grazing on the rich grass. The luxuriant vegetation on the moist soil, the bright-coloured flowers, whose perfume filled the air, refreshed both mind and body. The only inhabitants of these sweet-scented meads were a few songsters. Nature seemed to welcome the traveller here as a rare guest, and to surround him with the choicest gifts of her life-producing forces. A halt was made at Helman Station before commencing the passage of the Burdëh morasses, which extend for 7 miles in the low basin of the Nemör River, a branch of the Nonni. This was the most difficult part of the road: the worst swamps had to be passed before the bank of the River Nemör is reached. This river (marked on the Chinese maps Nanemör, called by the Chinese Momor-ho, and by the Dahurs Nemor-goss) flows between low sandy banks covered with grass and low bushes; its width is 30 fathoms, and its depth $1\frac{1}{2}$ fathom. It is crossed by means of a ferry, and soon after Burdëh (on the atlas Bordö) is reached: this is a village of some importance.

Traces of ancient habitations were occasionally seen. The river's course is marked by the bright orange-coloured strip of golden marsh-mallows which grow in great profusion along its banks. The petals of these flowers are two inches in length; they are of great value for medicinal purposes, as well as for seasoning Chinese cookery. They are called Hwang-hwa (yellow flower), but are known to the chemists by the name of Chen-tszin (pure gold). Ilkha, the next station, is a poor hamlet, inhabited by the Lökha Mantszi, *i. e.* "Chinese exiles." As the road approaches Mergen it passes over some hills, the last of which is wooded with elms and birches, the others are void

of trees. The village of Ban-kiau is situated at the foot of the pass, and is inhabited by Khàn Tszün, or Chinese soldiers enrolled in the Manchu banners. They were originally from the province of Shan-tung, and the artillery in the garrison-towns is entirely in their hands. The Dahurs said that there were volcanic hills, called Liù-hwang-shan, i.e. "sulphur-hills," to the north and east, but were uncertain if these volcanoes were active or not. The town of Mergen lies in an open desolate country, bare of trees, and is more like a village than a town. The Nonni flows nears it. The environs of the town are inauimate and steppe-like. The sole objects which arrest the attention are a temple, Lau-yeh-miau, with its grove of trees, and a solitary burial-place. The town-wall is built of wood, with earthwork behind: altogether the place has somewhat the appearance of a fortified gaol. The fortress contains the dwellings of the governor and the officials, four barracks, a school, and a temple. The fortress-town of Mergen was moved to its present site; its former position is occupied by a small trading settlement, consisting of not more than ten shops. It was hoped that the place would flourish better if removed, but these expectations have not been realized. The convict-settlers died off rapidly, and the town has so bad a name that no one wishes to live in it. It is now intended to change its position again to the original site. The necessaries of life are marvellously cheap at Mergen; the mules were fed on millet, which only cost a few tchoch; ten eggs were bought for one tchoch. Meat is abundant and cheap, and the cattle-plague has not penetrated as far as this district. But, notwithstanding these advantages, Mergen is a desolate spot, and the travellers' thoughts would frequently revert to the noisy, bustling life which had met them on the great highway of Manchuria, to the Upper Sungari (Girin ula), and to the Lower Nonni, to the fine pasture-land, the rich fields, and the populous and animated towns and villages they had left behind them, to those plains which, from the most remote period, served as practising grounds, where the semi-barbarous tribes from the woods and valleys of mountainous Northern Manchuria acquired the rudiments of settled life and political organization under the auspices of China and Corea.

There are a few Mohammedans at Mergen; they are forbidden to settle at any of the villages or stations along the road. Bank-notes of a private bank at Aikhun are current here and along the road to Aikhun.

The official inspection of the Russo-Chinese frontier takes place every summer. For this purpose officers bearing the rank of colonel are sent from Tsitsihar, Mergen and Aikhun, with escorts to different points on the frontier. In

order to control the survey, sign-boards are deposited along the frontier. The colonel from Tsitsihar should meet the colonel from Mergen on the frontier; they write their names on separate boards, and also the year, month and day of their meeting, and bury one board at the foot of a tree, while the other is suspended from the tree itself. The same order is observed by the colonels of Mergen and Aikhun at their meeting. The following year the surveyors discover these boards and bring them to the viceroy, who in his turn reports the progress of the survey to the emperor—the viceroy visits the frontier in person only once during the term of his holding office. The Russians call these surveying-parties on the frontier *Torgachini*. During the remainder of our journey we met no more *Ukheridas* or *Ilkids*. With the exception of the *Solones* we neither before nor afterwards saw a single *Butkhan* on our journey; apparently they were all dispersed, hunting in anticipation of the great fair (*Tchulkan*) at Tsitsihar. The chief tribes (on the frontiers of *Butkha*) are the *Solones* and *Dahurs*. At one time, the Chinese relate, the whole country of *Butkha* belonged to the *Solones*, and their name was held in such repute that the *Dahurs* and the wandering *Orontcho* considered it an honour to be called *Solones*; even at the present day at Peking, both young and old imagine the *Solones* to be a brave warlike race; this may formerly have been the case, but now the *Dahurs* have everywhere taken the pre-eminence over the *Solones*. From our observations they (the *Dahurs*) are better educated and are more often to be met with in the official classes; every time we met a *Dahur* and asked him to which he belonged, to the *Solones* or *Dahurs*?—he would instantly answer, "I am a *Dahur*" in the "*Civis Romanus sum*" tone of voice. The *Dahurs* accustom themselves more easily than the *Solones* to a settled mode of life. In days of yore both these tribes led a nomadic life; the emperor *Kaugh* first conceived the idea of teaching them the arts of husbandry, and dividing them into military commands, he established them in military-agricultural settlements. Chinese writers affirm that the name *Solon* is more correctly rendered *Saelo*, but this alteration gives no clue to the origin of this mysterious tribe. The most probable assumption is that *Saelo* was derived from *Sakhala*, which was the name of a tribe on the *Amur*, who became subject to the *Manchus*; the name however of *Solone* (*Solin*) was known before the time of the *Ming* dynasty. On the other hand, the word *Solon* suggests a curious analogy; it is certain that the *Mongols* called *Corea Solonga*, whence the *Manchu* term *Soilkho*, a *Corean*, is probably derived; it seems to me beyond all doubt that this name is borrowed from *Siulo* (other-

wise Silu and Siulu), at one period, for three successive centuries to the tenth of our era, a powerful state which included the whole of Corea. At that time too a colony of Coreans was sent into the country of the Tugui, whose sway extended to the frontiers of Manchuria: on these premises it is easy to form an hypothesis as to the Soloni having first originated from the colony of Coreans, who had undergone some change owing to the influence of the neighbouring tribes, but this evidence is not sufficient without the elucidation of further facts to support it. A more probable theory is that these Solones are the descendants of the Uriankha, a race but little known, who undoubtedly peopled this country from the present willow palisades northwards, including the Butkha of the present day. Modern writers think they can trace the Uriankha in the nomad district of Kharatchin, indeed they assert that Uriankhai was the name of Chingiz Khan's housekeeper; but writers of the Ming dynasty, who had accurate knowledge of the Uriankha, describe them as remnants of the Kidans, who, during the Mongol ascendancy, were under the government of the Mongol viceroys; they belonged to the same tribe as the Mongols, but were not Mongols—this hypothesis as to the origin of the Solones seems to be the most probable of all. The author of "Notes on the Amur" mentions the Russian Solones as from Kamnikhan ("shores of the Baikal?"), who were taken prisoners at the time of the invasions on the frontiers of Manchuria in the 18th century, but he confounds the Solones with the Tunguses, between whom he finds a similarity; the Dahurs, according to hearsay evidence of Chinese investigators, are the descendants of an ancient tribe of Kidans, called Daho; but it is hardly necessary to go so far back in order to discover the origin of that race; it is far more reasonable to agree with the opinion of those writers who have found a great many Chinese words in the Dahur language and have therefore considered them to be the descendants of the military Mongol-Chinese settlements; and it is certain that the Mongols established such colonies in the remote parts of their empire and sent Chinese artisans and husbandmen to assist in developing their prosperity. The Barkhu are Khalkhasts, who at one time migrated to the Russian territory, in consequence of the invasion of Galdan, but afterwards returned and settled on the confines of the Khulunbuir district. There are both old and new Barkhu; the former must be understood to refer to such as were scattered over the Hing-an Mountain Range to the east of Khulunbuir. Whether these Barkhu are connected with our Barkhu-buriats, and the latter with the Buriat-Uriankha or wild men of the woods, mentioned by Kanghi, it is difficult to say. With regard to the name Barkhu, it is found as the name of a

place near the Baikal under the form of Barkhu-tehin ("Bargazin") as early as the time of Chinghiz-khan, when it was the place of refuge for the defeated Merki, and these may possibly have been the ancestors of our Buriats. The Orontcho and their tribal connections, the Bilar, in the province of Tsitsihar are commonly called Tsilin (more correctly Kilin), otherwise Yeh-datszi; the word Tsilin is the name of a place which formerly carried on a trade with Orontcho, a trade which is now prohibited; Seh-datszi means wild Datszi. The Chinese gave this name to all the hunting and fishing tribes of Manchuria, and applied the same term to the Mongols with the addition of the pretixes Seh, wild, Yui-pi, fish-skins (on the Amur), and Tehan-m'ao, long-haired (on the gulf of Olga). The name Datszi dates in Manchuria from the time of the Mongol ascendancy, when the Mongols called the Churchi tribes, who lived along the Sungari and Ussuri rivers, Shui-dada or river Dada; the latter word applied in China generally to all the semi-barbarous tribes on the borders of Asia and was converted by the Chinese into Datszi. The Orontcho Butkhans are divided into two classes, (1) the Banner-men or military agriculturists, who belong to the cavalry and are therefore called horsemen, and not because they use horses instead of reindeer; (2) the footmen or pedestrian Orontcho, who lead a roving life and hunt wild animals on the mountains and in the forests. The Orontcho horsemen are governed in the same way as the bannermen; the foot Orontcho are under the supervision of five elders selected from among them, who are called Anda, or foster-parents. The Bilar are said to belong to the same tribe as the Orontcho, and are governed by four Boshkos of their own race; this tribe is seemingly unimportant. With regard to the Khunkhuri, as they are united with the Solones, they cannot be reckoned separately in the statistics of the country. Certainly there is great confusion in the ethnography of Manchuria, especially in those parts of the country where entirely different tribes meet; the more we study the history of the country, the more facts are brought to light and the more questions are suggested. Thus for instance, besides the tribes of Tungusses and Mongols, who are now in contact on the confines of Manchuria, there were formerly in this country settled colonies of the Tiurkeh race from the shores of the Yenissey—Kerghizes, Uriankhaitsi and Khanasi—who were removed by Khublai (in 1293) to Abalakh (the hunting grounds) near the Amur. It is difficult to say, Have these few people left any traces of their existence in Northern Manchuria, or did they disappear altogether? With reference to Butka, mention must be made of the celebrated wall of Uruch which extends from the west of this country, then south to Murán or

the hunting grounds, within the confines of Jehor. All that the Chinese know about it is, that according to tradition it was built by two brothers; according to the Mongol tradition (see Shishmareff) it was built by Chinghiz-Khan for his eldest son: the Mongols call it Khirinin-dzam ("road along the wall"). The only historical explanation concerning it is contained in the life of Chinghiz-Khan, where it is mentioned that his successor surrounded his paternal inheritance with a wall. Escaped convicts usually reach the frontier of China by means of this wall.

Leaving Mergen and the valley of the Nouni, the Russian Expedition entered the mountainous region which forms the watershed between the Upper Nonni and the Amur rivers. The nomenclature of this district is pure Chinese. The stations of Korol and Monaho were passed; the latter of which is colonized by Khan-tsiun, or Chinese bannermen; whose free, independent bearing and open faces contrasted favourably with the convict population. The children of these bannermen are very pretty and well-mannered; they all carry their pipes and tobacco-pouches. The road which ascended and descended the hills sometimes led through marshy ravines and along watercourses. The vegetation* on the hills is chiefly confined to underwood and grass; trees are only to be seen on the sides of some of the hills—birch-trees are the most common, dwarf oaks grow on the summits of the hills. Wild flowers abound, and include several new varieties seen by the travellers for the first time. Kaltarki station is situated in the valley of the Mona-ho, at the foot of some hills which lead to the principal chain of the Hing-an Mountains. The forests became denser, a thick undergrowth covered the steep sides of the rocky mountains, gad-flies issued out of the dark recesses in swarms, and fiercely attacked man and beast. After toiling up the steep, stony road, tormented by gad-flies and haunted by fears of tigers and bears, which are said to abound in these gloomy forests, the travellers suddenly emerged on an open terrace at the summit of the pass, and found themselves, as though by enchantment, in the heart of China. Here stood the red walls, triumphal arches, pavilions, minarets, and tiled roofs of a Chinese temple. This temple was built by the inhabitants of Aikhun, and dedicated as usual to Hwan-ti. It also contains shrines in honour of the lesser divinities, viz., Hwan-in, Tsai-shin (riches), Shan-shin (mountains), Khishin (fire), Lun-wan (rain), Ma-wan (horses), and To-wan (medicine); so that all comers can satisfy their immediate wants and religious cravings.

* For a description of the flora of the Hing-an Mountains see Radde, translated by Michell, 'Journal of the Royal Geographical Society,' vol. xxviii, p. 420.

The Lan-dao, superior, and a few lay-hermits have charge of the temple; they burn incense-sticks before the idols, and cultivate a little land and a garden near the temple. These anchores are of the Lokha, or class of exiles. The Superior, or Abbot, is a native of Sitchua; he is a very respectable man, though he seemed in ill-health; and his face bore that painfully scared, wistful look, which the travellers had noticed on nearly all the exiles they had seen, and which denoted suffering and hardships undergone in Chinese law-courts and prisons rather than actual guilt. A light refection of eggs, and icy cold water from the monastery well, refreshed the travellers after their fatigues, and gave them new strength for the difficult descent from the pass.

The station of Kumür is the first resting-place at the foot of the pass; the next place is Eh-yu-ir. The road is bad; swamps and lagoons, partially bridged over with birch boughs, retard progress and increase the difficulties to be encountered. But all these perils and hardships were at length overcome as the travellers surmounted the last pass (Hwan-an-ling, *i.e.* hill of wide tranquillity), and soon after caught sight of the great Amur and the confines of Russian territory. The last station before arriving at Aikhun is called Heh-lung-kiang-chan, *i.e.* station of the Amur; and here they bid adieu to the Hing-an-ling, or Peace-bringing Mountains—a name possibly suggested by their even, rounded contour and by the absence of lofty peaks in the range, excepting a few volcanic cones of no great elevation.

On the 17th June the Expedition arrived at Aikhun on the right bank of the Amur, a straggling town surrounded with wooden ramparts like Mergen, and governed by a Chinese amban (governor). The Archimandrite crossed the Amur at Aikhun in a light boat, sending the baggage to Sakhalin, opposite to Blagovestchensk and 70 li distant from Aikhun along the bank of the river. The water of the Amur is of a dirty sepia colour, which has earned for it the name of Heh-lung-ho, or Black Dragon River. The settlements on the Russian side of the river are chiefly inhabited by Dahurs, Manchus, and Chinese; these settlers do not fraternize with the Russians. Cossacks in red shirts were busily engaged in harvesting the hay crop. The distance by road to Blagovestchensk from a point opposite Aikhun is 25 miles. The Zéhya River (called Tsui-kiri by the Manchus, Whang-ho by the Chinese) joins the Amur 3 miles from Blagovestchensk. After crossing the Zéhya by the ferry, the Archimandrite Palladius drove to the Bishop of Kamtschatka's house, which is situated on the high bank of the Zéhya, where we must for the present leave him.

APPENDIX.

The following explanation of Chinese terms* will be found useful in reading the accompanying Paper.

<i>Hien</i> (pronounced hsien)	.. ..	District, city.
<i>Chow</i>	.. ..	Ditto.
<i>Ching</i>	.. ..	City.
<i>Pu</i>	.. ..	Provincial city.
<i>Tien</i>	.. ..	A shop, inn, tea-house.
<i>Tun</i>	.. ..	Military station.
<i>Chan</i>	.. ..	Courier station.
<i>Yi</i>	.. ..	Ditto.
<i>Miau</i>	.. ..	Temple.
<i>Tā, or tah</i>	.. ..	Pagoda.
<i>Ilo</i>	.. ..	River.
<i>Kiang</i>	.. ..	Ditto.
<i>Shan</i>	.. ..	Mountain.
<i>Ling</i>	.. ..	Mountain ridge or range.
<i>Lin</i>	.. ..	Wood, forest.
<i>San</i>	.. ..	Often means three.
<i>San-kia-tsz</i>	.. ..	The three houses.
<i>Tui</i>	.. ..	A tower or terrace.
<i>So</i>	.. ..	A small fortress.
<i>Wei</i>	.. ..	A large fortress.
<i>Lau</i>	.. ..	Old.
<i>Lau-ye</i> , name given to an idol	=	Old gentleman.
<i>Lau-ye-miau</i>	.. ..	Temple of an idol.
<i>Kou, or k'eu, or gou</i>	.. ..	Mouth, pass.
<i>Men</i>	.. ..	Door.
<i>Kuan</i>	.. ..	Ditto, custom's barrier.

* For this list of Chinese terms, and for his valuable assistance, I am greatly indebted to the Rev. J. Summers, Professor of the Chinese language at King's College, London.

VI.—*A Havildar's Journey through Chitral to Faizabad in 1870.* By Major T. G. MONTGOMERIE, R.E., F.R.G.S., Officiating Superintendent G. T. Survey of India, in charge of the Trans-Himalayan Exploring Parties.

[Read, May 13, 1872.]

THE Trans-Himalayan and Trans-Frontier explorations were carried on during 1870 in various directions in continuation of my general plan for systematically exploring all unknown or partially unknown countries beyond the British frontier; one line of exploration from Peshawur direct to Faizabad, the capital of Badakshan, was brought to a successful conclusion, and will now be reported on.



Map showing Route
from
PESHAWAR, THROUGH CHITRAL,
to
FAIZABAD IN BAKAKSHAN.
From the Exploration made by a Sapper Battalion
during 1870
to accompany the Paper by
Major T. G. Montgomery R.E. F.R.S.



The Figures denote the elevations in feet

of exploration from Keshmwar direct to Faizabad, the capital
Badakshan, was brought to a successful conclusion, and will
be reported on.

I have long wished to clear up the geography of the mountainous tract lying between Canbul and Little Tibet, which is bounded on the south by the Indus River, and its great Canbul tributary, and on the north by the Hindoo-Koosh and Mustaghi ranges. Though draining into our territory, and though we have several routes actually going into it near Peshawur, and again near Gilgit, our progress in clearing up the geography of this difficult tract has hitherto been very slow—reliable work, indeed, extending but a little way beyond the border. This ignorance has been the more aggravating as, from information derived from natives of the country, we really know nearly everything as to each separate portion, though unable to put the pieces together so as to form a reliable whole; the inhabitants who constantly come down to Peshawur, &c., being uneducated, and, consequently, incapable of explaining how any, except the larger, tracts lie with reference to each other. This being the state of the case, it appeared to me that, if a Route Survey could be carried right through the heart of the country, I should be able to get the correct positions of the larger places, and should, at the same time, be able to string together a large amount of detailed information which I have collected as to the minor tracts, valleys, &c., of the country, so as to form a fairly reliable map of the whole. With this object in view, I made various attempts to get a suitable agent from near the Peshawur frontier, but failed in getting a satisfactory one until I at last applied to Lieutenant-Colonel Maunsell, the Commandant of the Sappers and Miners, who placed at my disposal a very intelligent Pathan Sapper, who, after a great deal of labour, was trained to the work, and was getting on very well with a first attempt at exploration, when he was killed in a quarrel with some other Pathan with reference to some old feud between their families. As this was, however, in no way connected with his exploring work, it was determined to make another attempt: a Pathan from the frontier with the requisite amount of education was accordingly obtained, and his training nearly completed, when facts came to light that rendered it necessary to remove him. This was a great disappointment, but, still hoping for success, I applied, for the second time, to the Commandant of the Sappers, and was fortunate enough to have a Pathan Sapper placed at my disposal who was in every way qualified for the work; he was consequently carefully trained, and, after several preliminary trials, was started on an exploring expedition, with instructions to carry a Route Survey from Peshawur through Swat, Bajaur, Dir, Chitral, &c., to Badakshan.

Starting from Peshawur on the 12th of August, the party crossed into Swat by the Malakund Pass, on a range which rises

into peaks of 6000 to 7000 feet, reaching, on the 15th, Alladand, the capital of the present ruler of Swat, a small, poorly-built town of 300 houses. The next day, at a mile and a half north of Alladand, they reached the Swat River, a very large stream, which they crossed on rafts: continuing their march the same day, they ascended the opposite mountains, and, by an easy pass, crossed over the Lurru Mountains into the Talash district, and, descending to the Punjkora River, crossed it on the 17th. This river appeared to be even larger than the Swat River. From the Punjkora River they marched on through Jundul, the largest district of Bajaur, reaching, on the 18th August, Miankilai, the chief town of Jundul, and the capital, in fact, of the province. Bajaur is divided into three districts, viz., Jundul (Miankilai), Nawagai, and Shahr, each of which is ruled by a separate Khan: the two latter, however, being, in a measure, subordinate to the present Khan of Jundul, Faiz Talab Khan, styled Haji-Sahab-Zada in consequence of his having made the pilgrimage to Mecca, and who has, owing to this and his general uprightness as a ruler, become much respected, in spite of a slight weakness in the one matter of horses, which he apparently cannot resist taking at his own price for his own use—a failing which, however, I understand is looked upon with a very kindly eye by all except the immediate sufferers; the Bajauries, in fact, being a race of horse-dealers, appreciate any sharpness in such a direction. Having a great partiality for good horses, he has collected them from all parts of the province, and now boasts of a well-mounted force of about 800 sowars.

Faiz Talab Khan resides in Burwa, a stronghold of some pretensions: his influence extends beyond his own province, and he is considered to be a more powerful chief than the present ruler of Swat, or of any other of the neighbouring provinces; his rule seems to be exactly suited to the wild tribes he has to deal with, though he is unable to keep in check their innate thievish propensities; for even in his capital—Miankilai—the Sapper and his party only escaped being plundered by means of extra precautions and great vigilance—a plot to loot them having been formed soon after they arrived. After two days' halt the party travelled north, for one march more, through Jundul, and then crossing the Janbattai Mountains, which rise to 12,000 feet, they descended gradually through Barawul, part of which is under a brother of Faiz Talab Khan: thence passing into the Dir district, they arrived on the 23rd of August at Dir itself, which the Sapper reports as being a small town of about four hundred houses.

So far the Sapper had made his way as an ordinary traveller,

but from Dir to Chitral the road is infested by Kafirs, and it was consequently necessary to make some other arrangements, in order to have a chance of a safe transit across this dangerous tract. Traders are in the habit of halting at Dir or Chitral until a large number collect, in order that they may all start together: sometimes as many as 200 start at the same time, but, in spite of this and other precautions, the travellers are frequently attacked by the Kafirs, and many are killed. Those of the travellers who fall are buried by the side of the road, mounds surmounted by a flag marking their graves. These are called the tombs of the martyrs. The Sapper saw hundreds of these, anything but reassuring, memorials on the way between Dir and Chitral.

On arrival at Dir they were much disappointed to find that all the traders for the northern route had already left, and that there was nothing for it but to make a special arrangement for their party by itself. In this dilemma the Sapper presented himself before Ramatoolah Khan, the chief of Dir, and asked for assistance. Ramatoolah Khan questioned him as to the object of his journey, &c., and was, fortunately, satisfied with the answers he got.

The Sapper then placed a handsome gold-laced scarf by the chief, and pointing out that, as all the traders had already started, it would be simple madness for his small party to go by itself, he begged that the chief would kindly send an escort with them. After some hesitation the chief consented, and gave the necessary orders. The party accordingly resumed its march, and, on reaching the village of Kashgarai, found an escort of twenty-five armed men awaiting them; the next day they reached Gujor, and then, crossing the Lahori Pass, close to mountains of 14,000 feet and upwards, they, after a very trying march, reached the village of Ashreth. Here, in spite of their escort, they were much troubled by the Kafirs, who swarm in and about the village, the inhabitants pampering them, so as to escape being more openly plundered. During the night an incessant discharge of small arms was kept up on the Sapper's party, who returned the fire, but, owing to the darkness, there was no damage done on either side as far as was known. The next day they resumed their march, being glad to get safely out of Ashreth. Their escort accompanied them down to the Koonur River, and finally parted from them at the village of Galatak, in the Chitral district, where an escort was no longer necessary. From thence they made their way up the Koonur River to Chitral, crossing one very large tributary called the Shushidurra, which joins in on the left or eastern bank. On the road near Brary, on the 30th August, the Sapper first heard a report

of the murder of poor Mr. Hayward. The report was that a saheb, by name "Hawel," who had travelled from Kashmir to Chitral, and whose intention was to have gone thence into Badakshan, had been murdered at a place called Ooshgoom (distant about seven days' journey north-east of Chitral), by the order of Mir Walli, of Ooshgoom, son of the late Goraman of Yassin. The saheb was said to have been accompanied by eight servants, one of whom alone escaped, though not without some wounds, the other seven being all killed. After the saheb was murdered, some 700 tillahs, or gold pieces (about six rupees each in value), were found and taken by the murderers, along with his clothes, guns, pistols, his watch, books, and a variety of other property.

On the 31st of August the party reached Chitral, where their first transaction with the Chitral chief was an attempt on his part, through his Wazir, to make them exchange a portion of their goods at his valuation. The Sapper had an interview the next day with the chief, who is styled Badshah by the people thereabouts, but it was to no purpose, so there was nothing for it but to submit to the imposition.

The Sapper saw the chief Aman-i-mulk several times, and has given the following account of a very remarkable interview he had with him when Mir Walli, the murderer of Mr. Hayward, was present. "On the 4th of September the Badshah of Chitral sent for me (the Sapper), in durbar, and gave me a seat on his right, between himself and Mir Walli. After the ordinary inquiries the Badshah then commenced to talk with some of his durbar officials who sat opposite to him, and, while he was engaged thus, I turned to Mir Walli, and, in a quiet way, asked him what was the cause of quarrel between Hayward saheb and himself, on which he said to me that 'I was in no way inclined to quarrel with Hayward saheb, for I had seen him on a former occasion while he was travelling through our country, when we interchanged civilities and presents, and parted good friends; but on this latter occasion of his travelling through the country he was forcibly pressing coolies and other people to carry his baggage from stage to stage on his way into Badakshan, besides taking supplies of food for his followers from the villagers by force, and several complaints from the zemindars reached me to this effect. On Hayward saheb coming up to the village where I was, I remonstrated with him, and advised him not to act as he was acting towards the people, whereupon the saheb turned round on me and abused me, telling me that this country did not belong to us, but to the English, and altogether his attitude on the occasion was very violent, so much so that I feared his using personal violence to myself, and in consequence

I kept quiet. The saheb encamped for that night near the place I was, but, towards morning, I sent some sixty men to a place a little distance ahead, called Ooshgoom, with orders to wait in ambush for the saheb and his party, and on their way thence to fall upon them and kill them—which they did, killing Hayward saheb and seven of his servants.’”

It is generally reported in the country that on Aman-i-mulk (the Badshah of Chitral) hearing that Mir Walli had ordered Hayward saheb to be murdered, he exclaimed that “Mir Walli is my enemy, for what authority had he, without any order from me, to take upon himself to kill Hayward saheb? I must imprison him for the act.” Report furthermore says that Mir Walli, on learning this threat of the Badshah, fled into Badakshan, and hid himself in that country for about twenty-five days, after which he returned to Chitral and presented himself to the chief, giving him a gun taken from Hayward saheb. The date on which Mir Walli returned to Chitral was the 28th August, from which date they have appeared fast friends. The Badshah always now keeps one of Mr. Hayward’s guns beside him whilst in *darbar*.

The people of Chitral appear to be convinced that Mr. Hayward was murdered by the orders of Aman-i-mulk, the chief of Chitral, who used Mir Walli merely as an instrument in the murder; for they say that the fact of Mir Walli being away for so short a time after the murder, and then returning and continuing such a fast friend of the chief, tend to show that the chief’s appearing to have been annoyed on learning the saheb’s fate was simply a blind to throw the blame off himself, the actual offender. Moreover, the people of Chitral are convinced that Mir Walli could not have, on his own responsibility, undertaken the murder of Hayward saheb, for his authority in the country is so weak, that he would not have been obeyed had not a higher authority instructed him in the act. They are all convinced that Mir Walli’s flight and sudden return to Chitral were planned by Aman-i-mulk beforehand. Aman-i-mulk has the reputation of being a very deceitful man, speaking to the humblest of his men in a soft, hypocritical manner, behind which he conceals a bad, unfeeling heart. He is said to live in the constant fear that his country will be taken from him, and, to avoid any good excuse for this being done, his evil acts are always so planned that the blame should rest on the shoulders of others. The following illustrates this, which the Havildar heard from several individuals while in Chitral.

A Subadar named Dillawar Khan and two Sepoys belonging to one of the Native Regiments, serving under the British at a Frontier Station, were making their way into Badakshan by

Chitral, and were well received by the chief, and had left for Badakshan, when the Badshah got notice that a Subadar and two Sepoys employed by the British were taking notes of the country, and was recommended on their arrival at Chitral to detain them. The description given of these men, travelling as they were in the disguise of fakirs, corresponded with the three men, and they were pursued by the Badshah's men, overtaken and brought back to Chitral, and, by the chief's orders, kept close prisoners. After a confinement of 20 days they were brought before the chief, who told them that he had just learnt that they were employed by the British, but had he known this sooner they would certainly not have been imprisoned, so in order to compensate them and throw off all suspicion, he made them presents of chogas, &c., treated them with apparent cordiality, and asked them which way they intended to travel; on learning which, he ordered two of his men in their presence to escort them as far as a village which he named, and to treat them well, and see that they wanted for nothing on the road; but secretly he instructed the escort to murder them the moment they were out of his country; and, according to several reports, they did murder the Subadar, though the other two made their escape. Some, however, suppose that the Subadar died from cold and weakness. One choga and two note-books of the Subadar's are still reported to be in the hands of the petty chief at Zebak.

The account of Hayward's murder agrees in the main with that from other sources; Ooshgoom, where the murder was said to have been perpetrated, is, I presume, the Wurehagam noted on poor Mr. Hayward's map as the name of the stream or valley, immediately north of Yassin, through the lower part of which he passed when he first visited Yassin; Darkot is according to the account received from Kashmir the name of the village near which he was murdered; it lies 20 miles due north of Yassin.

The Sapper reports that Aman-i-mulk (the Chitral chief) seemed to be very friendly with Mir Walli, and most assuredly took a share of the spoils of poor Hayward's camp, for he always carried one of Hayward's rifles, taking it with him to the Edgah, or place for praying, where the Sapper accompanied him, and saw the rifle placed alongside of him.

Chitral consists of a number of small villages and separate houses scattered over a considerable area; and though, according to his boiling-point observation, it is 7140 feet above the sea, it is very hot at times during the summer. The government of the country seems to be only a few shades better than that of neighbouring Kafir tribes; the chief carries on the slave-trade

himself, i.e. catching Kafirs if he can, but failing them, seizing his own subjects and selling them whenever they give him an excuse for doing so by committing any real or imaginary breach of his laws. Probably no great numbers are thus sold into slavery, but, as far as could be made out, no family in Chitral is quite safe from that fate. The Chitral chief was, on the whole, very civil to the Sapper, and as soon as a one-sided exchange of goods had been effected, he allowed the party to march on towards Badakshan.

Starting from Chitral on the 5th of September, they continued their journey to the north, leaving the main Koonur River on their right, and ascending a large side stream, they, after some delay, reached the base of the lofty Nuksan Mountain by noon of the 15th September, and the same afternoon accomplished about half the ascent. The climate was very trying, partly on account of the steepness and partly on account of the snow. Their camp was of course a most uncomfortable one, but they were not able to enjoy long such small comfort as was to be got there, for it was necessary to be off by three o'clock the next morning, so as to clear the pass before the Kafirs met them,—the road near the pass being dangerous, owing to the strong bands of those robbers, who are always on the look-out for the chance of plunder. After a very stiff climb the party reached the crest of the pass, crossing large beds of snow and immense masses of ice—the road for a distance of 400 or 500 paces being literally cut through the ice to a depth of from 6 to as much as 12 feet. Every here and there the ice was fissured with vast cracks, which the travellers avoided with the greatest care.

The Sapper had never been on any snowy mountains before, but this account leaves no doubt in my mind that this part of the so-called Hindoo-Koosh range at any rate boasts of one glacier, the vast cracks, or, in other words, the crevasses, being quite unmistakable as they never occur in an ordinary snow-bed. As the mountains on either side of the pass rise considerably above it, the probability is that there are numerous glaciers in the neighbourhood. The above is the first evidence that we have as to there being any glaciers in the Hindoo-Koosh, nothing of the kind having been noted between Bamian and Pamir Kul, the most easterly point visited by the Mirza.

Having crossed the pass, they descended rapidly, and after a very hard march reached Daigul, the first village of Badakshan, and on the 18th September made their way to Zebak on the Kokcha River, the same group of villages that the Mirza had passed through in the previous year, thus completing a junction and connecting the two Route Surveys together. From Zebak they went down the Kokcha River, by much the same route

that the Mirza ascended, reaching Faizabad, the capital of Badakshan, on the 25th of September.

The Sapper found that Jehandar Shah, the Mir or ruler, who held Badakshan when the Mirza was there, had been supplanted by Mahmood Shah, who was assisted by the Amir of Caubul. The party had instructions to advance still further north across the Oxus, and they tried to arrange for so doing, but could not because the road in that direction was strictly closed by the orders of the Amir Sher Ali, who suspected that letters were sent by that route to Abdul Rahman Khan by his supporters in Caubul.

Whilst in Faizabad, the Havildar witnessed the fate of a man upon whom some such letters were found. The unfortunate wretch was thrown from a lofty bridge down into the rapid stream of the Kokela, and though not killed on the spot, he died a few days afterwards from injuries received by being dashed against the boulders which protrude from the water in every direction. This is a favourite mode of execution in Badakshan, and was noted by Wood when he passed through the country.

Being able to devise no immediate means of advancing to the north, the Sapper, according to his instructions, prepared to return. Starting on the 27th October, his party reached Zebak on the 31st of October, where they witnessed a meeting between the rulers of Badakshan and Chitral. On the 3rd November they left with a party of traders accompanying Mir Walli, the murderer of Mr. Hayward, who had come into Zebak with the Chitral chief. Whilst there the scoundrel Mir Walli had his leg broken between the knee and the ankle by the kick of a horse, and when the Sapper saw him he was in great pain with it, the bone never having been allowed to set.

From Zebak it was necessary for the party to take a different route from that by which they crossed the Hindoo-Koosh on their upward journey,—the lofty Nuksan Pass being already closed owing to the lateness of the season. The traders said the only chance was to try the Dora Pass to the west which was somewhat less difficult, though less used, owing to its running through a part of Kafiristan, and to its consequently being always infested by strong bands of Kafirs. The traders, however, having Mir Walli's escort, and being in considerable numbers themselves, thought they might risk the passage; they therefore marched on, taking the more westerly of the two streams, which, coming from the south, join at Zebak. The first day they reached Sanglech, where the cold was so intense (though it was only the 3rd of November) that the stream which flows past that village in a steep bed was already frozen

hard ; the next day they advanced to another village, also called Sanglech, and here two of the Sapper's servants deserted, being afraid to face the intense cold expected on the Dora Pass. The Sapper, however, resolved to go on with his diminished party ; on the 5th they encamped in a desolate place at the foot of the Dora Pass ; here they had to be very vigilant so as not to be surprised by the Kafirs, who are thereabouts more especially troublesome. By good arrangements they escaped an attack, and the next day they succeeded in crossing the Dora Pass, the road appearing to the Sapper to be even worse than the Nuksan Pass ; this he thinks was in part due to the lateness of the season. He says he never in his life experienced such hardship as he did on those two stages. The combined effect of the intense cold, the high cutting wind that prevailed, the fact of being deserted by two servants, and the anxiety owing to threatened attacks by the Kafirs, made them feel the height of misery, the more especially as from the 6th, when they passed the crest of the Dora Pass, till the 7th of November, when they reached Lotko, in the Chitral province, it was snowing hard. From thence they marched on to Shogoth, thus joining in to their former route. The Chitral chief caught them up and passed them on the way, and, thinking he had a good opportunity, he ordered an extra toll to be taken from the traders ; they, however, refused to leave Shogoth, and held out there six days, till they at last got better terms. The Sapper with them reached Chitral on the 16th of November ; on the 17th he again presented himself to the Badshah, who now, however, looked coldly on him, saying that he had heard he was in the employ of the English. The Sapper, however, was nothing daunted, and requested that he might have a pass for his return : the chief, though convinced he had heard a true account as to the Sapper, thought it well not to interfere with him and his party, and so gave the necessary order. The Sapper said when he left, Mir Walli was still in great agony from his broken leg, and as he could actually hear the bone grating when he moved, and it was then more than a month since it was fractured, there is little doubt but that this scoundrel may hereafter be recognised by his lameness, which is likely to be permanent, and which may yet perhaps assist in bringing him to justice and to the fate he so richly deserves.

Having completed his arrangements, the Sapper marched back by much the same route as he had advanced, reaching Peshawur on the 13th of December, having again passed safely through the corner of Kafiristan between Chitral and Dir, and not a little glad to think that neither he nor any of his men

had added another mound to the tombs of the many Mohammedan martyrs who have fallen on that road.

His Route Survey is 286 miles in length, over entirely new ground, which has never before been surveyed by an explorer, though no doubt other natives may have passed over the whole length. The route touches upon a great number of districts, and determines with all desirable accuracy a number of important places. It accounts for the geography of about 13,000 square miles of this *terra incognita*, and will aid in unravelling the geography of a still greater area. The route is checked by 20 latitude observations at 5 places. The boiling-point observations are very meagre,—the Sapper not quite appreciating their importance, this being his first expedition. He moreover says he wished to boil on the passes but was unable to do so without risk of detection, except on the Nuksan Pass, where unfortunately he could find no wood, being far above the limits of forests. From the glacier and the amount of snow in September as well as other evidence, I conclude the Nuksan Pass to be about 17,000 feet, that of Dora may be 16,000 to 16,500.

The position of Chitral has always been a great desideratum, and as it is so immediately north of Peshawur it may be concluded that it has been very satisfactorily determined, as any error in the distances could but very slightly affect its longitude, while its latitude is thoroughly established by three astronomical observations, which agree very fairly *inter se*, the Sapper having shown by his observations for Peshawur, and for Faizabad that he understands taking latitudes,—those at the latter place agreeing very closely with Wood and the Mirza.

The heights of Miankilai and Chitral, though only approximate, assist in forming a better general idea of the height of the countries traversed than we have yet had; a glance at the accompanying map will show what has been accomplished. Amongst other things it may be said that the course of the great Koonur River has been definitely, though roughly determined, as there now exist but two gaps—the first between Chitral and the Mirza's bearing from edge of the Pamir Steppe, which evidently points to the source of the Koonur River; and the 2nd gap between Chitral and Chigur Serai, as determined by Griffith's accurate observations. These gaps can in a measure be filled up by the aid of the numerous peaks which we have determined trigonometrically in that direction, and I think it may be said that those portions of the course of the Koonur River, will not hereafter be found to differ materially from the dotted line given in the map. Should any ex-

plorer hereafter be fortunate enough to traverse its whole course, his additions will be chiefly as to the side streams.

The Sapper's pacing, on the whole, seems to have been good. As compared with the difference of latitude between Peshawur and Chitral, it appears that one of his paces was on the average of 21·8 inches in length, which is somewhat short.

Accepting the Mirza's value of Zebak, and the Sapper's value for Chitral, the direct distance between these places should be 60·5 miles; using the value of the Sapper's pace as determined from the latitudes of Peshawur and Chitral, viz. 21·8 inches, the distance between those places would be 69·1 miles, a fair agreement, considering the roughness of the ground, and the fact that there is no telling exactly what points of Zebak the Mirza and the Sapper respectively refer to.

A further check is afforded by his route between Zebak and Faizabad being the same as that traversed by the Mirza; the Sapper gives very nearly the same average bearing, and makes the distance 62·9 miles, while the Mirza makes the same 59·5 of his miles, which, as shown in paragraph 30 of my last year's memorandum, were 0·02 in defect, and the 59·5 miles being consequently equal to 60·7 miles,—a close agreement, bearing in mind that Faizabad is a mile in length, and that there are eight villages in Zebak, and no particular place for halting in, travellers sometimes choosing one and sometimes another.

Altogether the Sapper's work has satisfactorily stood the tests applied; he has, moreover, fixed a number of peaks by bearings, and though mostly rather close to his route, they will aid in solving the geography of the surrounding mountains.

In my opinion, the Sapper deserves all credit for his great pluck and endurance, as well as for the discretion with which he penetrated through such a difficult country, without, I believe, getting into a single disturbance with the people of any of the districts he traversed, though constantly bullied by requests for legal and illegal tolls, which were made at most places. I am convinced, moreover, that his undaunted bearing on his return journey, when the chief had guessed his secret, was the means of preventing himself and party from being sold into slavery, or possibly from a worse fate, the wily chief probably thinking that his co-religionist, who showed such a bold front, did so because he was backed by something more than the few men he had with him.

NARRATIVE REPORT.

The Sapper left Peshawur, accompanied by his assistant and servants, on the 12th of August, and arrived towards evening at a village called Nasath; on the 13th arrived at Jelala village; on

the 14th, reached the village of Durgai, which is on the frontier of Swat, and not in British territory. Durgai is surrounded by a mud wall, about 40 feet in height, and three feet in thickness; it is occupied by an unscrupulous set of bandits, and, consequently wholesale robberies and murders are quite common. On the morning of the 15th of August they left Durgai village, and, after crossing the Malakund Range, reached the village of Alladand towards nightfall. This place, Alladand, is the seat of the present Khan, or ruler of Swat, a man not equal to governing the country properly, and hence the people are dissatisfied, and are always intriguing to induce his predecessor to resume the rule of the country. The village of Alladand consists of about 300 houses, built of stone cemented with mud. On the morning of the 16th August, after paying the tax imposed for the goods with them, the party left Alladand village; marching on for a mile and a half they reached the Swat River, which they crossed on rafts, arriving by night at a group of four villages, called Ooch, one of which belongs exclusively to the sect called Saiyuds, and the other three exclusively to Pathans.

On the 17th they reached the small fort of Serai by noon, and after paying the usual toll charged there, they travelled on till they arrived at Shumshi Khan village, where they had to pay another toll. Both these villages are presided over by officials styling themselves Khans, and are amenable to Faiz Talab Khan, the ruler of Bajaur. Continuing their march on the same day, they crossed the Punjkora River, and stayed for the night at Kotkai village; the tract from the village of Ooch to the Punjkora River constitutes the district called Talash. On the 18th they arrived by night at Miankilai, which is the largest and most important town in all Bajaur; it is situated in the largest of the three subdivisions of the Bajaur Province, viz. Jundul. The town of Miankilai has about 1000 houses—built, as usual in these parts, of stone cemented with mud.

The present ruler of Miankilai has, owing to his popularity, the greatest amount of authority of all the Khans in the Bajaur district, and is styled by the people Haji-Sahib-Zada.

The party halted at Miankilai for two days, in order to take star observations for the determination of its latitude. While halting for the purpose, a plot to loot the party was made by a gang of thieves; this fortunately was revealed to the Sapper by the owner of the house they occupied, and consequently, by extra caution and vigilance on their part, the danger thus threatened was warded off.

On the morning of the 20th of August they left Miankilai town, and arrived at Kanbat village, situated in Jundul. This

village is notorious for thieves, and they had to adopt great precautions for the security of their baggage. On the 21st they reached the fort and village of Janbattai, after crossing the mountain of the same name. The ascent of the pass of Janbattai from either side is stiff, but fortunately several springs of water exist on the way, and help to allay the immoderate thirst produced by the ascent. The northern slopes of this mountain are covered with dense pine-forest, while the southern slopes are only partially covered. It rained for half the day while they were on the Janbattai Mountain.

Here the Sapper met Feroza-Khan (brother to Faiz Talab Khan, of Jundul), who is the possessor of a small tract of country, including several villages in the Barawul district. He appeared friendly though anxious to find out the real object of the Sapper's journey; fortunately the latter managed to ward off all suspicion as to the real state of affairs, by giving out that he was going to Chitral, in the hope of getting some presents from the Badshah, whose reputation for such was proverbial, and at the same time to obtain some falcons for which Chitral is far famed, and which fetch such high prices in the Punjab. Feroza-Khan has a great partiality for fire-arms of all descriptions, and showed a large number of guns of English manufacture, which he had been at great pains in collecting.

On the 22nd they reached, towards evening, the village of Soorbat, situated in the district of Dir. Half-way on this march they came across the fort and village of Bandai, situated on the frontier of the Barawul district. On the 23rd they arrived at the village of Dir, which contains about 400 houses. The present ruler of Dir is Ramatoolah Khan, son of Ghazan Khan, who during his lifetime ruled the large tract of mountain-land which at present constitutes the district of Dir. Ghazan Khan was a powerful chief, and his authority was very great, for even the Badshah of Chitral was tributary to this chieftain. He left nine sons, all of whom aspired to the vacant Guddee, and bloodshed among these brothers ensued, till at last Ramatoolah Khan, the eldest, established himself permanently as chief. The brothers then dispersed themselves over the country, but are still jealous and impatient of Ramatoolah Khan's authority, endeavouring to throw the country into a state of disaffection and anarchy, by questioning their eldest brother's right to the Khanship of Dir.

Ramatoolah Khan is in person a handsome, manly young chief, 6 feet in height, and is mentally well fitted to rule in such a country. His administration of justice is the theme for praise with all the people.

The road from Dir to Chitral is infested with Kafir robbers, who are much dreaded by travellers. It can be said to be open for only two and a half months of the year, from the latter end of May to the middle of August. Two reasons make the road impracticable during the remaining months of the year, viz., the snow during the winter, and the dread of the Kafirs during the warmer months.

Having made arrangements, the party continued its march on the 25th, and reached a village called Kashgarai, from whence an escort of twenty-five armed men accompanied them on the 26th on the route to Chitral. On the 26th they reached the village of Gujor, inhabited only during the summer months; on the 27th, after crossing over the Lahori Mountain, they reached the village of Ashreth, after a very tedious day's journey. Immense quantities of iron are found in the bed of a small stream which rises at the foot of the Lahori Mountain; the process adopted to obtain this iron is similar to that in the washing of gold-dust from the streams of other parts of the country. A quantity of sand from the stream is placed in a sieve and washed till the iron is left behind.

Ashreth village is the resort of scores of the Kafir robbers. It is the place most dreaded by the merchants who travel by this route. The Kafirs usually keep up an incessant fire on travellers throughout the night. The exploring party was not spared in this respect, and hence passed a most anxious night, returning the fire of the robbers, but with what effect the darkness prevented them from ascertaining. Leaving Ashreth on the 28th, they reached the village of Darosh at night, after having dispensed with their escort at a village called Galatak, situated in the Chitral district. Darosh possesses a fort which is the residence of Kokan Beg, brother to Aman-i-mulk, the Badshah of Chitral. This Khan levies on all merchants and others a toll or tax, but in consequence of a letter having been sent to him by the ruler of Dir, through one of his officials, asking him to exempt the party from all tolls, they were not asked to pay anything.

On the 29th they reached Shushidurra, a small village on the right bank of the Shushidurra River, which throughout the year contains so large a volume of water, that at no time is it fordable, and always has to be crossed by a bridge. This river flows into the Koonur River.

It is reported that in the neighbourhood of this village a silver mine exists, which is said not to be worked because the chief of Chitral fears that, were the fact known to the Amir of Cabul, or the Maharajah of Kashmir, or the Amir of Badakshan, his country might be wrested from him. The silver,

it is rumoured by the people, was accidentally discovered in a spot in this neighbourhood by a Fakir, who in person reported the circumstance to the Badshah of Chitral; the latter was then conducted to the spot, and after satisfying himself of the truth of its existence, he is said to have imprisoned the discoverer, and then to have poisoned him. The existence of silver hereabouts is not unlikely, for the country is rich in copper mines, which are said not to be worked now, for the same reasons as given for not working the silver. "Orpiment," or yellow arsenic, called Hurlal, which is much used for dyeing cloth, is also found in large quantities in the country. On the 30th they left Shushidurra, and travelled to Bruz village.

On the 31st August the party reached Chitral. On the arrival of any merchant at Chitral an official of the Durbar immediately reports the circumstance to the chief, with a list of the merchandise with the merchant. The Badshah's Wazir then repairs to the merchant and in his master's name informs him that the Badshah requires to exchange goods with him to a large amount. The arrival of the party was reported in due course to the Badshah, who sent as usual his Wazir with the stereotyped request to exchange goods; but thinking that they might avoid this imposition, they requested time up to the next morning to make up their mind on the matter. Consequently, on the morning of the following day the Sapper went to the residence of the Badshah in the fort. The Badshah then interrogated them as to where they had come from, where they were going, and as to the object of their journey. They answered that they had come from Peshawar and were going to Bokhara, where they hoped to recover money from certain of their countrymen who had amassed large fortunes and were settled in Bokhara. The chief of Chitral advised them not to attempt the journey, for the road was closed to travellers onwards from the river Hamoon (the Oxus) by the Amir of Badakshan, Mir Mahmood Shah, in compliance with orders received by the latter from Sher Ali, the Amir of Canbul, who has considerable authority in Badakshan. The reason for this prohibition is, that about a year and a half ago, on the persons of three travellers, who were on their way to Bokhara, and who were accidentally searched, were found letters of great political importance, purporting to have been written by certain intriguing Sirdars of Canbul to Abdool Rahman Khan, nephew of the present ruler Sher Ali of Canbul. Abdool Rahman Khan was said to be at this time in Bokhara under the protection of the Russian Government. These three men, on whom the letters were found were forwarded on to Canbul, and by order of the Amir were blown away from guns. All these matters were told to the Sapper direct by the Badshah

of Chitral himself, in order to foreo him to interchange the goods he had brought with him, such as richly-worked scarfs, chuddurs, &c., with such articles as he would or could give in return, and seeing his intention the Sapper replied that at least he would travel up as far as the frontier (the Hamoon River), even supposing that he could proceed no farther.

On the 5th September, 1870, after making arrangements for the onward march, and disposing of a couple of asses which were of no further use, the party left Chitral and reached the village of Shogoth towards evening. At this place they had to halt on the 6th and 7th, in order to change carriers. On the 8th they left Shogoth and reached Shali village. On the 10th they marched to Hurkarri village, where they stayed till the 13th September.

On the 14th they left Hurkarri and reached the village of Oweer: the road on this march for a mile is very dangerous for laden animals, and so they had to unload the ponies and convey the baggage on men. On the 15th, by noon, they reached the foot of the mountain called Nuksan; after refreshing themselves they commenced the ascent that same day, but had to encamp about half-way up the hill in consequence of night coming on. The ascent of this hill is attended with great fatigue, being covered with snow nearly from the foot of the mountain; the slope is great, and a high, cold, and sharp wind always blows throughout the day, making it very disagreeable for travellers. The feeling of shortness of breath is felt on this mountain, and travellers eat raw onions on making the ascent, in order to counteract, if possible, the giddy feeling which comes over every one.

On the 16th they rose at about 3 A.M. and resumed their journey, reaching the crest of the mountain at daybreak; this was done so as to avoid any likelihood of the party meeting with the Kafir robbers, who from this point again begin to be dangerous. The party continued their march till they reached the village of Daigul, making altogether a very long and tedious march.

On the 17th they discharged the carriers who were with them, and halted at Daigul (which is on the frontiers of Badakshan), to make fresh arrangements for carriers, &c. On the 18th, the arrangements being completed, they started, and reached Zebak, which is formed of eight villages scattered within a small distance of each other. The present petty chief of Zebak, Mir Hak Nazar by name, has received his authority direct from the ruler of Faizabad. Zebak is in a valley from 2 to 3 miles in length and surrounded on all sides by mountains: three streams, one flowing from Yarkund, one from Daigul, and the third from

Sanglech, meet at Zebak and flow from thence in one united stream towards Faizabad.

One road leads from Zebak towards Yarkund, another leads to Daigul, a third leads to Sanglech, and a fourth to Faizabad. The trade in slaves of both sexes assumes no great proportions in either Chitral or Faizabad. In the former place it is monopolized by the chief, and no one besides himself dares to sell slaves, while in the latter place merchants chiefly from Bokhara deal in them, the ruler of Faizabad taking no part in the transactions.

The party was delayed at Zebak for two days, in consequence of an attempt that was made there to induce them to surrender their goods with little or no payment, which the Sapper on the other hand was determined not to do, at any rate without the payment of their full value.

On the 21st they reached Sufail Durra village, on the 22nd Soofian village. The country about this village is very productive in fruit of all kinds; the apple grows to perfection, and is so abundant that for a single copper they bought about fifty. On the 23rd they reached Yaddar village, on the 24th Robat, and on the 25th September they arrived at Faizabad.

On arrival at Faizabad they learnt that the road through Kolab into Bokhara was closed by the orders of the Amir of Caubul, in consequence of his being suspicious that this road was the one used in the conveyance of letters to Abdool Rahman Khan from intriguing Sirdars in Caubul, and that they, to avoid all suspicion, had the letters conveyed in the first instance to Peshawur, and thence through Swat, Chitral, Faizabad, Rustak, &c., into Bokhara.

The present ruler of Badakshan, Mir Mahmood Shah, was placed there in October, 1869, by Sher Ali Khan, and is tributary to the latter. He is in caste a Saiynd and is reputed to be a learned man; the people of Badakshan, however, are averse to his rule as he oppresses them by demands for extra revenue, &c., which is taken from the people on the plea of the same being demanded by the Amir of Caubul, but a large portion of which they are certain is retained by Mir Mahmood Shah for his own use. No less a sum than 80,000 Rs., besides 500 horses, was paid to Sher Ali during the first year of Mir Mahmood Shah's rule in Badakshan. The former ruler of Badakshan was Jehandar Shah, an intimate friend of Abdool Rahman Khan; and when the latter fled to Bokhara, Jehandar Shah also left his country and followed his friend, the country being taken from him by Mir Mahmood Shah. The chief of Badakshan up to this time never paid any tribute to the Amir of Caubul.

Jehandar Shah, when chief of Badakshan, is said not to have

oppressed his subjects, and though a drunkard and a dissolute character, was able to maintain his independence, and never paid any tribute to Caubul. Traders from all parts of Turkestan, Bokhara, Caubul, Candahar, &c., resort to Faizabad, and the Bajanri Pathans flock thither in large numbers to barter and trade.

The contrast between the two dnrbars of Chitral and Faizabad is very striking in the matter of the authority of their respective chiefs, the manner in which the Durbar is conducted, &c. The chief of Faizabad is much respected in Durbar, and the despatch of public business, the conduct of public worship, the dress of the people, and other public matters, betoken the prosperity of the country and the security from oppression which the people really enjoy.

It was commonly reported in Faizabad, that a Saheb who had travelled a long distance and had gone to Caubul and received a letter from Amir Sher Ali had found his way into Faizabad, where he was treated in a very cordial manner by Mir Mahmood Shah who gave him a small escort to enable him to travel to Yarkund; he had left Faizabad but ten days when the party arrived there. This Saheb carried quantities of medicines with him and gave medical aid to the inhabitants of the countries through which he passed. It is reported that he found his way to Yarkund, but that he was imprisoned there, for unknown reasons, by the Khoosh Begi or the ruler of that place. During his stay in Faizabad the Sapper witnessed the fate of three men on whom letters, written by some Sirdars of Caubul to Abdool Rahman Khan and Jehandar Khan, had been found. They were at first sentenced to be hanged, but their lives were interceded for by some people, and the sentence was accordingly commuted to exile for two of the lesser offenders, while the chief offender was ordered to be thrown into the river, a mode of punishment much practised there. Owing to the rapid current of the river flowing over a rocky bed, this practice seldom fails to prove fatal to the victim; in this case, the offender, though escaping immediate death by being washed to the other bank, yet died ten days after, of the wounds he had received from being dashed against the rocks. The place of exile to which the other two men were sent is called Sarab, a spot so hemmed in by dangerous and steep mountains that once in the spot it is almost impossible for the victim to escape.

During their stay in Faizabad, the Sapper heard a rumour that Abdool Rahman Khan, assisted by the Russians, had marched on the city of Shahri-Subz, but was repulsed. On learning that the leader of the enemy's force had been shot down, they were said to have returned to the attack and to have taken and plundered the city.

On the 27th October they began their return journey, and reached Robat village, on the 28th Yadar, on the 29th Soofian, on the 30th Sufaid Durra, on the 31st Zebak, where they halted the next day, the 1st November, and witnessed the meeting of the chiefs of Chitral and Badakshan who had journeyed thither for friendly intercourse. The former had 700 sowars with him as his escort, and the latter 2000 sowars or mounted men. It was supposed that the meeting of the two chiefs was dictated from fear of their countries being taken from them by the Amir of Canbul, and hence negotiations for offensive and defensive alliance were entered into on the occasion. Presents were interchanged between the chiefs, the Chitral chief giving 21 slaves of both sexes, and also his daughter in marriage to the Faizabad chief's son, and the latter presenting the other with 60 ehogas of Bokhara manufacture, also two swords and a horse.

On the 2nd November, they halted at Zebak. On the 3rd they travelled along with the traders accompanying Shah Zada Mir Walli to Sanglech. On the 4th November they reached another village, also called Sanglech. On the 5th they encamped in a desolate spot at the foot of the Dora Pass. On the 6th they crossed the Dora ridge and encamped at the foot of the pass on the other side near the site of a hot spring, the water of which is hot enough to boil eggs in a short time.

On the 7th November they reached the village of Lotko, situated in the Chitral district. The Badshah and his followers passed on this march on their return from the interview with the chief of Badakshan. On the 8th they reached Darosh village (not the Darosh mentioned on their first journey). On the 9th day they reached Shogoth, the same place they passed on their first journey. Here they were detained for six days, in consequence of the traders in whose company the party travelled refusing to pay the higher rate of toll imposed by the collector of the place by the orders of the Badshah.

On the 16th they reached Chitral, and on the 17th the Sapper again presented himself to the Badshah, but his treatment of him this second time was cold, for he said that he had heard the Sapper was in the employ of the English, and he could not be persuaded to the contrary. However, he did not molest them in the least.

On the 23rd they left Chitral and continued their march over the same road they had gone up by, halting daily at nearly all the same places as on the former journey, but, from unavoidable circumstances, they halted for two days at Darosh, three at Dir, and two at Hotee Murdan. They reached Peshawur on the 13th December, 1870, and thence returned to the head-quarters of the G. T. Survey.

OBSERVATIONS FOR LATITUDES TAKEN IN CENTRAL ASIA.

No. of Observation.	Astronomical Date.	Watch Time.	STATIONS.	Object.	Upper or Lower Transit.	Double Altitude.	Single Altitude.	Index Error.	Deducted Latitude.	Mean Latitude.	REMARKS.
1	1870	h. 8	Camp Peshawur	Polaris ..	..	67 0	0	+4 30	33 56	33 56	Not observed on Meridian.
2	Aug. 5	55 p.m.	Ditto ..	" ..	..	68 40	0	..	33 56	33 56	Ditto.
3	" 5	11 26 "	Ditto ..	" ..	..	69 0	0	..	..	..	Ditto.
4	" 5	11 36 "	Ditto ..	Altair ..	..	115 41	0	..	..	..	Ditto.
5	" 5	9 32 "	Ditto ..	" ..	..	121 18	0	..	..	..	Ditto.
6	" 5	9 57 "	Ditto ..	" ..	..	123 0	0	..	..	..	Ditto.
7	" 5	10 2 "	Peshawur Mundece	Fomalhaut ..	..	51 31	6	..	31 0	31 0	On Meridian.
8	" 6	2 a.m.	Ditto ..	β Ceti ..	..	74 43	0	..	31 0	31 0	(Not observed on Meridian.
9	" 19	48 "	(Mankilal (District) Bajaur)	Fomalhaut ..	..	43 37	0	..	..	..	dian.
10	" 19	11 36 p.m.	Ditto ..	" ..	..	44 34	0	..	..	..	Ditto.
11	" 19	11 45 "	Ditto ..	" ..	..	45 33	0	..	..	..	Ditto.
12	" 19	11 53 "	Ditto ..	" ..	..	56 30	0	..	..	..	Ditto.
13	" 19	0 40 a.m.	Ditto ..	β Ceti ..	..	57 37	0	..	..	..	Ditto.
14	" 19	0 45 "	Ditto ..	" ..	..	58 41	0	..	..	..	Ditto.
15	" 19	0 50 "	Ditto ..	" ..	..	125 35	0	..	35 36	35 36	On Meridian.
16	Sept. 1	Noon.	Chitral	Sun ..	..	71 6	0	..	35 49	35 49	Ditto.
17	" 4	1 50 a.m.	Ditto ..	β Ceti ..	..	74 30	28	..	35 49	35 49	On Meridian.
18	" 4	2 45 "	Ditto ..	Polaris ..	..	45 22	0	..	37 5	37 5	Ditto.
19	Oct. 2	11 36 p.m.	Faizabad (Badakshan)	Fomalhaut ..	..	77 10	0	..	37 9	37 9	Ditto.
20	" 2	0 36 a.m.	Ditto ..	Polaris ..	..	68 27	0	..	37 8	37 8	Ditto.
21	" 3	1 12 "	Ditto ..	β Ceti ..	..	68 27	0	..	37 8	37 8	Ditto.

OBSERVATIONS OF THE BOILING-POINT TAKEN IN BAJAUR AND CHITRAL.

No. of Observa- tion.	Month and Date.	Watch Time.	STATION.	THERMOMETER.				Reduced Height above Sea.	REMARKS.
				No.	Boiling- point.	No.	In Air.		
1	1870 August 11 ..	H. M. 1 0 P.M.	Peshawur Mundee ..	..	210	..	100	Feet. 1165	Height from G. T. S.
2	.. 20 ..	7 0 A.M.	Miankila (Bajaur District) ..	..	206	..	81	3535	
3	Sept. 4 ..	4 0 A.M.	Chitral ..	..	200	..	90	7137	

THE POSITIONS OF THE CHIEF PLACES AS DEDUCED FROM THE SAPPER'S ROUTE SURVEY ARE AS FOLLOWS, VIZ.:—

—		Latitude.		Longitude.		Height.	
Alladand, capital of Swat ..	.. .. .	34 38	72 0	.. .. .	.. .. .	3540	
Miankila, capital of Bajaur ..	.. .. .	34 53	71 38	.. .. .	.. .. .
Janbettai, capital of Barawal ..	.. .. .	35 8	71 41	.. .. .	.. .. .
Dir, capital of Punjkora ..	.. .. .	35 14	71 49	.. .. .	.. .. .
Chitral, capital of Chitral ..	.. .. .	35 46	71 46	.. .. .	.. .. .	7140	

VII.—*Surveys on the Road from Shiraz to Bam.* By Major B.
LOVETT, R.E.

[Read, May 13, 1872.]

THERE are several roads that run between Shiraz and Kerman; that usually travelled over, and the one I adopted, goes *viâ* Niriz. The other usual one is *viâ* Darab. In summer, a road leading over very elevated ground and going *viâ* Shehr-i-Babek is sometimes taken. The different routes are detailed at the end of this memorandum. The road I took leaves the Shiraz Valley to the north-east, passing by the Bagh-i-Dilkhusa and Saadi's Tomb, and is a very fair road as far as the town of Niriz, so that carts can proceed along it without the slightest difficulty. After arriving at Dudeh, our first stage, I found the road to Niriz lay in the Persepolis Valley, as I shall call it for the sake of distinction, as the famed ruins are situated in it. This valley or "Julga" extends from Mayin on the west to Niriz, its eastern extremity, and measures about 210 miles in length. The western portion is called Mervedasht; at the point my route entered upon it the district is called Kolwar. In this valley is situated the famous salt lake known as the "Deria Nirmuk," and generally designated in the published maps as Lake Bakhtagan; why I know not, as the inhabitants of its southern shore do not even recognize it by that name. When I passed by, the lake was quite dry, but its usual limits were well defined by a wide expanse of saline deposit. As far as I could discover, it appears that this expanse is generally covered with salt water to the depth of from 1 to 4 yards, but this year, owing to its being the third rainless season, the lake has been thoroughly dried up. The Bundamir River, which drains a very large basin and is a considerable stream, dwindles to a small stream by the time that it reaches the margin of the lake, its waters, except in rainy seasons, being exhausted by numerous canals and other irrigation works which occur in its course through Mervedasht and Kolwar, especially in the latter district. Major St. John, R.E., suggested that I should probably find the lake to lie a great deal more to the south than the position it is usually represented as occupying. A glance at the map will show that Major St. John was correct in his conjecture. The axis of the lake, so to speak, partakes of the parallelism of the valleys and chains of mountains adjacent, and these in all hitherto published maps of Persia incline insufficiently to the south. The rock on both sides of the valley is a limestone of the same general characteristics

as the limestone near Shiraz, which I believe is "nummulitic." I observed to the south of the hills forming the southern boundary of the Persepolis Valley, that there existed a lofty snow-capped range running parallel with it: this lay between the valley of Rohniz and that of Fesa, but is not the "Gushnagan" Hills of the maps, which are a distinct range nearer to Shiraz. The position of Niriz ascertained on this journey differs very considerably from that shown in even recently published maps. I have marked in red its usual position. This town, which is situated about 12 miles east of the shores of the "Deria Numuk," is of considerable commercial importance. Its exports are chiefly almonds and figs, which are shipped in great quantities *via* Bunder Abbas for Bombay. The population is said to be about 3500, and the revenue paid to the Government of Fars amounts to 12,000 tomans. It is a large town with many orchards, vineyards, and gardens interspersed between houses built of sun-dried bricks. It is divided into three parishes or "mahalehs"; that to the south, termed the "Mahaleh Bala," is well known to be peopled almost entirely by Bâbis, who, though they do not openly profess their faith in the teachings of Syud Ali Mahomed, the Bab, still practise the principles of communism he inculcated. It is certain, moreover, that the tolerance which was one of the chief precepts inculcated by the Bab is here observed, for not only was I invited to make use of the public humam, if I required it, but quarters also were assigned to me in a "Madresseh." On the road to Niriz, after leaving Duhdeh, I passed Kerameh and Sijilabad, both large villages surrounded by very extensive fruit-growing gardens. The third day's halt was at a tower midway between Kerameh and Khir, called Khan-i-Kitf, and situated in the midst of a small wood of binneh* or van-trees. Khir is a large village situated at the entrance of a pass connecting the Persepolis Valley with those of Rohniz and Savonat, Idj, and Darab.

The lofty range of hills, at the foot of which the town of Niriz is situated, is there locally termed the "Loirez" range; further to the north the same chain is called from the villages on its southern slopes the Koh-i-Deh Mord and the Koh-i-Kwaja Mali respectively. This range then runs on in a north-westerly direction past Bohnat, Dehbid, and Izidkhast on the Tehran road. There are extensive forests of wild cherry-trees on the hills of Kwaja Mali, the wood of which forms a staple article of commerce. A thorough exploration of this chain of hills from its culminating point, Padinah, to where it terminates

* The wild pistachio.

near the shores of the Persian Gulf, would be most interesting geographically and geologically. Unfortunately, these hills are infested with robbers of the Lushani tribe, both summer and winter. Several times during our four days' journey in the Persepolis Valley their horsemen reconnoitred our party, which they evidently considered too strong to be worth an attack on the caravan. The passage over the Loirez Hills is by a pass 18 miles long, attaining an elevation at its watershed of 5640 feet, Niriz being about 4280, and Kotro, the halting-place in the next valley, being about 4250. This pass is not practicable for artillery, and the supply of water is precarious.

The Kotro Valley beyond, with its solitary village, presents a picture of desolation that I have rarely seen equalled. It runs in a more southerly direction than the Persepolis one, and has no visible limit in that direction except the horizon. So far, indeed, does it extend that the Collector of Kotro, Futh Ali Khan, repeating the popular tradition, told me it extended to the confines of Sind! The Darab Valley joins it a few fursukhs to the south of Kotro, and the two amalgamated go on towards Tarm. The hills on its eastern side are lofty, one specially so, called Tung Chal. These hills belong to the main chains running from Dehbid. The lower ground of the Kotro Valley is occupied by low marshy ground, a salt lake after rain, and a salt desert or "kevir" in dry seasons. It is very extensive. The village of Kotro itself consists of about 40 houses. Owing to the failure of some "kanats," or subterranean canals, the wealth and population of this village have much decreased; but though at present a miserable wreck, it contains several fine old forts and buildings and two wind towers, which form capital landmarks. The house in which I was accommodated contained very large and lofty rooms in the old Persian style; but all in a lamentable state of disrepair. This valley is famous for its herds of wild asses, or Ghur-i-Khar. There are in the neighbourhood, it is estimated, upwards of 2000 head. They may be seen browsing early in the morning; but though I came across traces of them very frequently, I was not fortunate enough to fall in with any. A good horse, if brought within a fair distance, can easily outrace them, but they have better wind. From Kotro there are two roads that lead to Saidabad, the chief town of the next valley to the east (called the Valley of Sirjan). One path goes *via* Perpa and Mekabad to the south of Koh-i-Tung Chal; the other *via* Bishni, Dasht, and Khairabad by the route lying north of that mountain. I chose the latter. Bishni is a small village nestled among some limestone ridges that form the northern boundary of the Kotro Valley. On the road I passed

strata of slate and white marble. Crossing the watershed we proceeded another stage on to Dasht, or Sir-i-Dasht, a hamlet consisting of a cluster of wretched huts and a solitary tower with a not over-abundant supply of brackish water. The name of the place means "stone" in Turkish, from the fact of there being lead mines here. I visited the works, if they can be so called. The seams containing the ore run parallel to the general strike of the hills. It is found both in the form of an oxide, and associated with copper. It is reduced to a metallic state by pulverisation, washing, and heating in a blast furnace, all of which operations are performed in the rudest and most primitive manner. The refuse copper ore is thrown away, as the miners are not acquainted with the manner of reducing it to a metallic state. There are about 40 miners here. The yearly outturn is about 4500 mans, of which one-sixth is levied as a tax by the Fars Government. From Dasht I proceeded to Khairabad, which is situated at the foot of the Tung Chal range, and by the shores of another great salt lake. It was the frontier village of the province of Fars in this direction lately; but now it pays revenue to the Government of Kerman. I here reached the valley separating the hills which form a continuation of the Delbid range from those that are a continuation of the Koh Rud Hills. This valley, therefore, extends from Ispahan, past Aberkoh and Shehr-i-Babek to Sirjan, and then onwards to the south-east past Baft, the Afshur, and Aktar districts to that of Jiruft and thence to Bamapur. The hills opposite to me at Khairabad are, so to speak, the backbone of the mountain system of Iran. They are the continuations of the only granitic range encountered on the road from Bushire to Teheran. The granite is of a grey colour generally, and appears at the crests of the hills in conjunction usually with trap rocks. As at Kohrud, so also by the Khan-i-Surkh Pass, when crossing this range I observed the rock on the flanks of the granite was chiefly marl and clay. On the south side, that is the Sirjan front, the clay near the main chain is covered with huge fragments of trachyte. The bed of clay on which these masses rest is separated now from the main chain by a valley in which the Saadatabad River runs, and their presence here, without exhibiting any marks of being water-worn, seems to indicate the presence of glaciers in this range at some previous epoch.

Sirjan is an extensive corn-growing district, and is the granary of Kerman. Its chief town is Saidabad. There are about 150 villages in this "buluk" or district. After leaving Saidabad, where I staid one day and was hospitably entertained by Yayah Khan, the Collector, I proceeded to a large village called

Saadutabad, and thence over the mountain range above alluded to, putting up in a solitary serai termed Khon-i-Surkh, built by Abbass II., but repaired lately by the Vakil-ul-mulk. The watershed I crossed was about 8000 feet above the sea-level, and the serai was at above 6700. The cold during the night was considerable. From Khon-i-Surkh I descended into the Mushis Valley, which extends to the foot of the Koh Huzar, and contains numerous villages. Two stages further brought me to Kerman, where I staid a week. This town is not well supplied with water, and there are many places in the Kerman Valley and near the town that would be preferable as the site for a large town. This spot I suppose was principally chosen for the sake of a rock of limestone on which are the ruins at present of a fort called the Kaleh-i-dokhter, from which a capital view of the city is obtained. As I wished to ascertain the true position of Khabis with reference to Kerman, I proceeded to that town, reaching it in three stages. It is on the north-east side of Kerman, separated from it by a mass of mountain, mostly limestone, but having the highest peaks of granite probably, as in a river-bed, near Gok, I saw numerous boulders of that material. Khabis is the name of a district and town producing dates and oranges, and the terminus for kafilahs proceeding across the deserts to and from Seistan, Neh, Kain, and Meshed, and is therefore of considerable importance; it is about 1500 feet above the sea. At the season we visited it (December 22nd), the climate was delightful. The gardens are extensive, and look very pleasing, as the rich green tints of the orange-trees relieve the monotony of the date-palms interspersed. The supply of good water is constant and abundant. No less than eleven varieties of fruit of the *Aurantiacæ* are grown here. The Persian name for this kind of fruit is "murukhubat." The names are as follows:—

PERSIAN.	ENGLISH.
Patavi.	Shaddock.
Balang.	Ditto.
Turunj.	Citron.
Narinj.	Bitter Orange.
Naringi.	Sweet Orange.
Bukrai.	Ditto.
Limou Khariki.	Lemon.
Maidani.	Sweet Lime.
Limou Ab.	Sour Lime.

Sweet oranges were procurable at the rate of 100 for 1 franc. I anticipated being able to proceed from Khabis direct to Bam across the desert, or rather along its borders, passing by Knshit. The

authorities, however, dissuaded me from attempting this route on the plea of want of water and long marches. As the habitual security of this part of Persia had been lately rudely disturbed by a large body of Belooch robbers, I have no doubt but that was the real reason. I had, therefore, to re-enter the hills and proceed south by a valley parallel to the direct road from Mahan to Khan-i-Katum, and in three marches, one of 45 miles in length, reached the latter village. We passed Undujird and Gok on the way, being most hospitably entertained with our numerous following by the respective Collectors, Mirza Mehdi Khan and Mirza Hossain Khan. Just before getting to the former place, on entering the low hills, I visited the old castle of Undujird, which was built in the time of Nadir Shah, as a look-out station to repress Belooch raiders. The view from this was extensive, and the mountains of Kain, Neh, and Bindan were pointed out to me. The hills through which we passed on the way to Khan-i-Katum were chiefly composed of limestone and marl rock. The highest elevation we attained was about 7000 feet. Gok stands at about 6000 feet above the sea, and is a very large village with numerous large gardens of fruit-trees and vineyards. Owing to the late prevalence of dry seasons the inhabitants have suffered much from the failure of the fruit crops; but the lot of all the inhabitants of this well-governed and prosperous province is happy compared with that of the inhabitants of Irak and Yezd. At Khan-i-Katum I reached the main route proceeding from Kerman to Bam; but as the remainder of my journey to Bam is over a road lately described, this part of my travels calls for no further remarks.

Appended is a list of the marches I made, and also of the alternate routes from Shiraz to Kerman. I should mention that the whole route lies through comparative deserts, bare and stony; cultivation is only met with at rare intervals and in small patches.

ROUTE FROM SHIRAZ TO BAM.

From.	To.	Miles.	Districl.	Name of Collector.	Water Supply.	Population.	Remarks.
Shiraz	Dodeh	34	Kolwar	Mushir-ul-mulk	Springs	200 houses	Proceed to Sadia through Tang-i-Turkan to Karawal Khaneh; road to Bideh; valley of Khuzkh Mola. Pass villages of Khuzkh Mola, Darhan, small serai Dodeh. First part of road stony.
Dodeh	Keramch	19	Do.	Mushir-ul-mulk, proprietor Sujaul-mulk.	Spring	500	Pass Yazdikhist on right, Khairabad and other villages in Kolwar plain to left: pass stream after 8 miles: road good. Sijilabad, large village 2 miles to north: gardens, fruits, &c. abundant.
Keramch	Khan-i-kiff	21	Khir	Agha Buzurk, of Savonat.	Kanat—no fodder	None	Pass Chinar and Hallalabad, Kalch Dhi, old ruin to right: round headland over bridge called Pul-i-Talkh. Jungle van-trees at Khan-i-kiff tower, ruins of serai. Road good all the way. After Hallalabad no water.
Khan-i-kiff	Khir	23	Do.	Ditto	Streams	200 houses	Along shores of salt lake good road: tents Bakral elia, pass spring of hot water, Pass Khairabad.

Khur	Neriz	35	Neriz	Syud Bisi	Kanats	3000	Pass villages of Nafargah, Mahomelabad; no water after latter till Burj Hajarabad. Neriz large town, three parishes, every sort of provision. Ancient masjid, A.H. 310.
Neriz	Ketro	39	Ketro	Fath Ali Khan	Kanat	40 houses	Road good to pass; water procurable half-way near eastern extremity; tower Dehshaw, Ketro, two forts with wind towers.
Ketro	Bishul	22	Do.	Ditto	Stream well	50 houses	Road over "Kevir," then along bank of a stream amidst tamarisk bushes. Bishul has a four-towered fort and a garden.
Bishul	Fasht	20	Do.	Muahir-ul-mulk	Well; no feed for	30 huts	Road winds between low hills, stony but fair. No accommodation at Dasht; well, with brackish water.
Dasht	Khalabad	23	Sirjan	Yayeh Khan	Kanat	1 fort, 6 families	Road passes over pass, then along a plain at foot of Tungehal hills and along shore of salt lake; cultivation near village.
Khalabad	Saidabad	20	Do.	Ditto	Kanat	100 houses	Cross salt lake, passable after rain, salt being very hard. Pass Tarabad land extensively cultivated; villages numerous; Saidabad large town. Chief town of district, bazars, hammams.

ROUTE FROM SHIRAZ TO BAM—continued.

From.	To.	Miles.	District.	Name of Collector.	Water Supply.	Population.	Remarks.
Saidabad	Saidatabad	16	Do.	Kel Khoda Meshki-Astur	Kanat	150 houses	Over uncultivated plain. Large house at Saidabad available.
Saidatabad	Khon-i-Surkh	25	Do.	.. ..	Stream	Serai: nothing procurable	Road shortly winds along bed of river, had ascent and cross; Koh-i-Pardiz descent to solitary caravanserai.
Khon-i-Surkh	Mushis	..	Do.	.. ..	Stream	Large village	Proceed along river bed east, then north to Mahonuk's ruined fort; proceed easterly descending to Mushis, several villages about.
Mushis	Baghin	34	Kerman	.. ..	River Charuk	120 houses	Road passes through hills of some little elevation over two passes. The second called Ghand-i-Dokhter, pass serai Khan-i-Isht, water; then across valley to Baghin, serai and irigo village.
Baghin	Kerman	23	Do.	Kalantar Khan	Kanat	.. ..	Road over plain north-east direction, pass serai Hossini; Kerman, capital city of province and seat of Government.

Kerman	Tungi N'in	20	Kobpahl	Hossain Khan	Well	.. ..	Road lies through wide pass past Saadin Pass. "Golgiz" valley turns to east, and contains several villages. Large trees, water, and pasturage.
Kobpahl	Faizabad	32	Khabis	Mirza Mehti Khan	6 houses, provision precarious	.. ..	Along river "Khabis" to foot of Kothul. Best to halt here and go on to Khabis next march, as Kothul is difficult.
Faizabad	Khabis	13	Do.	Kulentar Asadullah Khan	Stream from spring river	.. ..	Road good to Khabis; easy descent.
Khabis	Undujird	15	Do.	Mirza Mehti Khan	Stream	10 houses	Road over sterile plain to foot of hills; pass Geklis, pretty village with gardens and date groves, ruins of fort of Undujird. Latter fine village, date-trees, orange-trees.
Undujird	Gok	32	Gok	Mirza Hossain Khan	Kanat	300 houses	Road goes past Rutkha, water, small hamlet through pass going near Jolaban and Hashtaden. Then south to Fanduka, small village, water, over pass, descend to Gok. Large village, extensive gardens.
Gok	Khan-i-Katum	44	Rayin	.. ..	Stream	25 houses	Road runs in valley going south; no water; good road; cross two water-sheds; descend into Rayin Valley. Khan-i-Katum small.
							Remainder of route already known.

ALTERNATE ROUTES FROM SHIRAZ TO KERMAN.

Shiraz.	Shiraz.	Shiraz, &c., to	Shiraz, &c., to	Shiraz.	Shiraz, &c., to	Shiraz.
Dodch.	Maluulu.	Niriz.	Niriz.	Maluulu.	Niriz.	Zirgan.
Keranah.	Rohnia bala.	Kotro.	Kotro.	Mian jangal.	Dehelah.	Khanjan.
Khan-i-kiff.	Rohnia payin.	Perpa.	Perpa.	Fesaa.	Cha Khushk.	Arzinjan.
Klar.	Klar, &c.	Khonumri.	Khonumri.	Jiltun.	Cha Dadun.	Mazar.
Niriz.		Soldabad, &c.	Soldabad, &c.	Darab.	Robat.	Khousar.
Kotro.				Shikarn.	Chinar (near Shir	Khurrah.
Bishni.				Chah Noh.	Bahck).	Robat.
Dacht.				Mekabad.	Sir-i-Powlet.	Shut.
Khairabad.				Soldabad, &c.	Khairabad	Shahr-i-Babek.
Saidabad.					Mahramabad.	Paikaleh.
Sandutabad.					Kuhuterkhanah.	Kaleh Agha.
Khon-i-Surkh.					Daglin.	Robat.
Mushis.					Kerman.	Baghin.
Baghin.						Kerman.
Kerman.						

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THE UNIVERSITY OF CHICAGO



The
SOLOMON, NEW HEBRIDES,
AND SANTA CRUZ GROUPS.
(SOUTH PACIFIC OCEAN)
to illustrate the Paper
by
Lieut. A.H. Markham R.N.

English Voyages ————
French Do ————
Spanish Do ————

VIII.—*The New Hebrides and Santa Cruz Groups.* By Lieut.
A. H. MARKHAM, R.N.

[Read, June 10, 1872.]

DURING a cruise on board H.M.S. *Rosario*, under my command from October 1871 to February 1872, it was my duty to visit nearly every island in the New Hebrides and Santa Cruz groups; and, as no paper on these little-known islands has yet been published in the Journals of the Royal Geographical Society, some account of them, and of their inhabitants, may be acceptable. It will be well, however, to preface my personal observations with a brief enumeration of previous voyages, by which a clear idea will be presented of the extent to which these groups have hitherto been explored, since the time of their discovery. Such a *résumé* naturally commences with the voyages undertaken by the Spaniards at the period when they were at the height of their power, and when the spirit of enterprise and adventure was fully developed among them.

The imperial ideas of the Spanish viceroys of Peru led to the discovery of the Solomon and Hebrides groups; for those ambitious statesmen were not satisfied with the great western provinces acquired by Spain, and aspired to the renown of adding a southern empire to the vast realms of the Catholic King. With his mind bent upon this achievement, that calm and laborious administrator, Lope de Castro, found time, amidst the cares and anxieties of Peruvian legislation, to fit out an expedition at Callao, under the command of his young nephew Alvaro de Mendaña, then only 27 years of age, and to despatch it with orders to discover the supposed southern land. In three days Mendaña, accompanied by Hernan de Gallego, an accomplished navigator, as chief pilot, (and the expedition) sailed from Callao on the 10th of January, 1568, and discovered the Solomon Islands. After a long voyage across the Pacific, they anchored off an unknown land, to which Mendaña gave the name of *Santa Ysabel de la Estrella*. Here they established their head-quarters, and the Spaniards had convincing evidence of the cannibalism of the natives, by being presented with an arm and shoulder of a boy, which Mendaña caused to be solemnly interred in presence of the savages that had brought it; who, says the historian of the voyage, went away with their heads down.* The natives were engaged in wars amongst themselves, and they made several attacks upon the Spaniards, which led to loss of life on both sides. Mendaña caused a small vessel to be built, drawing little

* "Se fueron baixadas las cabeças."

water and suitable for the navigation of intricate channels, in which the pilot Gallego was despatched to explore the group of islands. This experienced navigator made a more complete survey than has ever been attempted since his time. Besides the four great islands of *Ysabel*, *Malayta*, *Guadalcanal*, and *San Cristoval*, he discovered a vast number of smaller islets and gave the names to ten of them, which they still retain:—

<i>Ramos.</i>	<i>Guadaloupe.</i>
<i>Buena Vista.</i>	<i>Sesarga.</i>
<i>Florida.</i>	<i>San Jorge.</i>
<i>San Durias.</i>	<i>Santa Catalina.</i>
<i>San German.</i>	<i>Santa Ana.</i>

Mendaña also named the southern extremity of *Ysabel* Island, *Cape Prieto*, an anchorage in *Guadalcanal* *Port La Cruz* and two rivers in the same island, *Gallego* and *Ortega*. The latter places have never since been visited, and the north-eastern side of the large island of *Guadalcanal* is still entirely unknown. The return voyage was disastrous, strong head-winds delayed them many days until the daily rations were reduced to 8 ounces of pounded biscuit and one cup of foul water for each man, and both vessels lost their main masts. But at length they reached the coast of Mexico, in January, 1569. The only published account of this important expedition consists of a few pages in the biography of the Marquis of Cañete by Figueron;* but the journal of the pilot Gallego has been preserved, though it is still in manuscript.†

A quarter of a century was allowed to elapse before the attempt was renewed. Mendaña had called his discoveries the *Salomon Islands*, with a view to enhancing their importance by inducing the belief that they were the lands whence the riches of the temple were brought; and the question of their colonization was never lost sight of. In 1590 the gallant Don Garcia Hurtado de Mendoza, Marquis of Cañete, became viceroy of Peru; and in 1595 he resolved to attempt the settlement of the Solomon Islands. The command of the expedition was again intrusted to Mendaña, and the Marquis declared that, although the enterprises of Drake, Cavendish and Hawkins rivalled the achievement of Magellan, yet that in Mendaña Spain had a commander not less famous and distinguished than any of the great navigators who had gone before him. The Santa Cruz group was discovered in Mendaña's second expedition, which sailed from here in 1595; and the islands of the different groups

* *Hechos de Don Garcia Hurtado de Mendoza, 4.º Marqués de Cañete*, por Dr. Don Christoval Suarez de Figueron (Madrid, 1613), lib. v.

† *Viago á las Yslas de Salomon por Gallego*, *Additional MSS.* 17,623, *British Museum*.

have since been visited by Carteret, Bougainville, Cook, and other well-known navigators. The second expedition of Mendaña was composed of four vessels. On board the *capitana* named *San Geronimo*, was the Adelantado Mendaña himself, his wife the Lady Isabel, his brother-in-law Don Lorenzo Barreto, the master of the camp Manorque, and the chief pilot Don Pedro Fernandez de Quiros. The pilot is described as "a man of known worth, experienced in the dangers of the sea, and learned in many things of the heavens having to do with navigation." (He is said to have been a native of Evora in Portugal, but he had been long in the Spanish service. The second ship was the *almiranta* named *Santa Ysabel*, under the command of Lope de Vega, and there were also a *fragata* and a *galeota*, named respectively the *San Felipe* and the *Santa Catalina*.) With a view to colonization, a number of married men were enlisted on the Peruvian coast valleys of Truxillo and Sana, who were embarked with their wives, at the port of Cherrepe; the whole force numbering 368 men, of whom 200 were arquebusiers. The expedition finally sailed from Payta on the 16th of June, 1595, and, after discovering the Marquesas, land was sighted from the *capitana* on the 7th of September. The *almiranta* was nowhere to be seen, but the *fragata* and *galeota* were in company; and right ahead a lofty sugar-loaf rose out of the sea, with cinders and flames issuing from its summit. At intervals there was a loud rumbling noise, followed by dense volumes of smoke. Mendaña sailed round the volcano in search of the *almiranta*, but she was never heard of again. No tree or green thing was to be seen on the *Volcano Island*, but land was in sight to the south, and as the three Spanish vessels approached it, they were surrounded by natives in canoes. The natives are described as of a black colour with frizzled hair, often dyed red or yellow, quite naked, with their skins painted in stripes darker than its natural colour. On their persons they wore large and small plates of shell. They were armed with bows and arrows, some of the latter being pointed with bone and anointed with some poison, which the Spaniards, however, did not believe to be very deadly.* They also had spears and heavy wooden clubs. They discharged volleys of arrows at the ships, and the soldiers were ordered to fire in return, when one native was killed and many were wounded.

Mendaña at first believed that he had reached the Solomon Islands. He called the land *Santa Cruz* and anchored his vessels in a bay at the north-west end, to which he gave the name of *Graciosa*. A small green island near the entrance was

* "Aunque de poco daño."

named *La Huerta*, or the garden. Here the Spaniards determined to form a colony; and Mendaña secured the friendship of an old chief, named Malope. But every village formed a separate and hostile community, and the friendship of one by no means secured even neutrality from others. The Spanish watering-parties were attacked, and the Master of the *Camp* landed, with 30 arquebusiers, to take vengeance by fire and sword. He killed five natives, cut down the coco-nut trees, and burnt the villages and canoes. Mendaña then selected a site for a town, and his people began to fell trees and build houses. He describes the animal and vegetable products of the island, the various kinds of roots used for food, and the practice of chewing betel. The native huts are described as round, and resting on a central pole, the whole being roofed with palm-trees. They are surrounded by a stone breastwork, and in each village there is a large house or temple, containing rudely carved wooden figures in half relief. The *fragata* sailed round the island of Santa Cruz, and visited the *Reef Islands*, where eight native boys were kidnapped.

But the expedition of Mendaña was fated to end in failure. The beginning of the disasters was the murder of the chief Malope by some Spanish soldiers. The murderers were punished with death, but this did not satisfy the islanders, who ever afterwards showed the most resolutely hostile feeling. The change of climate and diet, working in the sun, wet clothes, and sleeping on the ground, brought on diseases, and many Spaniards died in their huts on shore. The natives ceased to bring in any supplies; and at last a mutinous feeling appeared among the troops, which was not quelled until the Master of the *Camp*, with two others, had been executed for insubordination. To crown these misfortunes, the Adelantado Mendaña himself was taken ill and died. He had powers from the king to appoint his successors, and he named his wife Doña Isabel, as General of the fleet, and her brother Don Lorenzo as second in command. On the 17th of October the gallant explorer was buried with all possible splendour, the body being wrapped in a shroud, covered with black cloth, and borne to the grave by eight of the chief officers, followed by soldiers with their arms reversed, to the sound of muffled drums. Soon afterwards there was another encounter with the natives, in which Don Lorenzo was wounded with an arrow. He died on the 2nd of November, and was buried with the same honours as Mendaña.

The Governess Doña Isabel now resolved to abandon this ill-fated settlement, and renew the attempt to find the Solomon Isles. She embarked with the sick; but the banner remained on shore for a few days longer, while the few healthy soldiers

procured wood and water. At last all were embarked on the 7th of November, and, after obtaining a supply of provisions by force from the island of *La Huerta*, the expedition bade farewell to the isle of Santa Cruz. The body of the Adelantado Mendaña was disinterred and put on board the *fragata*, for conveyance to Manila. The brave Governess, aided by Quiros, at first intended to complete her husband's work by sailing to the Solomon group, but the increasing sickness of the people obliged her to bear up for the Philippines, in order to bring priests and colonists and to obtain supplies. Disease raged on board the ships, and we are told of the good deeds of a hermit, named Juan Leal, who was an old soldier in the Chilian campaigns. He tended the sick, made their beds, gave them medicine, and consoled them when dying, ever with a kind smile and cheerful face. Many died every day. The deaths increased, but at length the *capitana* arrived at Manila on the 11th of February, 1596, where the sick were kindly treated and the Peruvian widows found new husbands. The *galeota* also arrived safely, but the *fragata*, with the body of Mendaña on board, was lost. She was reported to have been seen to ground on a reef with all sail set, and all on board dead. The pilot Quiros escorted his fair Governess to Mexico, whence he proceeded to Spain, and ceased not to send in memorials, urging the advantages of another attempt to discover the southern continent.

The published account of Mendaña's second expedition, is in the 6th book of the life of the Marquis of Cañete, by Suarez de Figueroa, which is avowedly taken from the papers of the pilot Quiros. Some further particulars will be found in a letter from Quiros to Antonio de Morga.*

The untiring perseverance of the pilot Quiros, in urging the Spanish Government to despatch another exploring expedition in search of his great southern continent was at last rewarded, and he was himself ordered to proceed to Lima and fit out two ships, to be provided by the Viceroy of Peru. After some months the equipment was completed, one vessel being commanded by Quiros himself, and the other by Luis Vaez de Torres. They sailed from Callao on the 21st of December, 1605, amidst the acclamations of a vast concourse of people, the firing of salutes, and the fluttering of hundreds of gorgeous banners. Six monks of the order of St. Francis accompanied the expedition, and they christened the Pacific Ocean by the name of "the gulf of our Lady of Loreto." After touching at several islands, one of which is generally supposed to have been Tahiti,

* 'Sucesos de las I-las Philipinas, por el Dr. Antonio de Morga' (Mexico, 1609). Translated and edited for the Hakluyt Society, by Lord Stanley of Alderley, pp. 65-74.

they sighted land on the 7th of April, 1606. At a distance it appeared to be only one island, but on approaching nearer, it turned out to consist of several small islands with reefs; and an anchorage was found near them, there being a larger island at a short distance. One small island rose like a castle out of the reef, with many huts upon it, where the islanders took refuge when they were attacked by enemies. The natives were friendly and supplies were easily obtained. Quiros requited their hospitality by seizing four men, to act as interpreters; but he had already obtained much information from the chief, named Tamay, respecting the size and position of neighbouring islands. He found that that on which they had landed was called *Taumaco*, and that there was a much larger island to the southward, called *Manicolo*. Three of the kidnapped natives jumped overboard and escaped, the fourth appears to have been a prisoner at Taumaco, and he was taken to Mexico where he died. He stated that he was a native of an island called *Chicayana*, four days' sail in a canoe from Taumaco, where the natives had long loose hair; that three days' sail from Taumaco, and two from *Chicayana*, there was another island, called *Guaytopo*, and that from an island to the south called *Tucopia*, it was five days' sail to Manicolo.

Sailing from Taumaco, they saw land towards the south-east on the 21st of April, and passed close to the island of Tucopia; and on the 25th they named a lofty islet, *Nuestra Señora de la Luz*. On that afternoon they were in sight of land in all directions, and touched at an island which was named *La Virgen Maria*. The natives invited the Spaniards to approach by waving branches of palm, and as soon as the boats were within range, poured in a deadly volley of poisoned arrows.* The Spaniards replied by a discharge of musketry, killing and wounding several of the islanders. The ships then stood for the extensive land in sight to the south-west and entered a large bay on the 30th of April, which was named, "*San Felipe y Santiago*." The ship anchored in a good port at the head of the bay on May 3rd, which was called *Vera Cruz*, and two rivers which flowed into it received the names of *Jordan* and *Salvador*. Quiros gave a most inviting account of the surrounding country, and, believing that he had at length discovered his southern continent, he named it *Australia del Espiritu Santo*. On landing, a native chief drew a line on the beach and made signs that no Spaniard must pass it; but Torres, thinking that compliance would appear cowardly, crossed the line. The islanders then discharged a flight of arrows, and the Spaniards fired upon them,

* "Flechas armadas con yerba."

killing the chief and several others. The rest fled, and so all chance of a friendly understanding was destroyed. Several long expeditions were afterwards made into the interior, in search of provisions, when there were more encounters with the natives; and the prospects of the city of *New Jerusalem*, the foundation of which was decreed by Quiros, were far from being promising. The misfortunes of the expedition were increased by an accident arising from the ship's companies having eaten some poisonous fish, called *pargos*; owing to which they were all attacked with a violent disorder that disabled them for some days. The remedies of the surgeon (Andrada) were bleeding and cupping night and day. At last the expedition sailed on the 5th of June, but encountered a heavy gale of wind outside the bay. Torres put back and anchored again; but there appears to have been a mutiny on board the ship commanded by Quiros, and he was forced to make sail and return to Spanish America, with a heavy heart at his ill-success, reaching Acapulco in October. Torres sailed round the north end of *Espíritu Santo*, and afterwards discovered the strait which bears his name. Quiros proceeded to the Court of Spain, and at once began to send in memorials, beseeching the king to give him the command of another expedition, and representing the advantages of settling the vast lands of Australia. At length his prayers were favourably received, but he died at Panamá, on his way out to equip vessels at Callao.

The fullest published account of the voyage of Quiros will be found in Torquemada's '*Monarquía Indiana*,'* an abridged translation of which was published by Dalrymple;† but further interesting particulars will be found in two '*Memorials*' by Quiros himself,‡ in the '*Memorials*' of Juan Luis Arias,§ and of Torres,|| in a letter from Diego de Prado,¶ who was in the expedition, but an enemy of Quiros, and in the accounts of the purser Juan de Iturbe, and of the pilot Gaspar Gonzales de Lerza, which are still in manuscript, in the National Library at Madrid.**

More than a century and a half elapsed before another exploring expedition visited these islands, though Le Maire and Schouten in 1616, and Roggewein in 1722, must have passed very

* Lib. V. cap. lxiv. p. 738.

† '*An Historical Collection of Voyages and Discoveries in the South Pacific Ocean.*' By Alexander Dalrymple (London, 1770), i. p. 95.

‡ Translated by Dalrymple.

§ Translated in Major's '*Early Indications of Australia.*'

¶ Given in Major's '*Early Indications of Australia*' and in Lord Stanley's '*Philippine Islands*' (Hakluyt Society).

¶ Also in Lord Stanley's '*Philippine Islands*,' p. 412.

** J. M.

near them. The chances of the Spaniards passed away with their famous navigator, and the death of Quiros at Panamá perhaps changed the history of the great southern continent of Australia.

At last, in 1767, Captain Philip Carteret * approached the islands on almost the same track as that of Mendaña's second expedition. But, though sent to explore unknown lands, Carteret was very badly supplied. He was in an old sloop called the *Swallow*, scarcely seaworthy when she sailed, and now in a leaky condition; and half the men were down with scurvy. On the 12th of August the *Swallow* anchored in a bay at the eastern end of the northern side of Santa Cruz Island, and the master was sent away in the cutter with orders to examine the land to the westward. The party was attacked by the natives when they went on shore, and several men were severely wounded. The master returned with three arrows in his body, and he and three of the men died of their wounds. A lieutenant went on shore in the long boat for water, and was also attacked; so Captain Carteret brought the *Swallow's* broadside to bear on the watering-place, and when arrows were discharged at the landing-party, he opened fire from the ship, and very soon cleared the bush, 200 natives rushing out and running away. The watering was then completed without further molestation. Captain Carteret was confined to bed by an inflammatory attack, the master was dying, the lieutenant, and gunner, and 30 men were incapable of duty, and among the latter three were mortally and seven severely wounded with poisoned arrows.

On the 17th the *Swallow* stood along the coast, and Carteret gave the name of *Eymont* to Santa Cruz Island. The north-east point of the island was called *Cape Byron*, the first anchorage *Swallow Bay*, a small harbour to the westward, just big enough to receive three ships, *Byron's Harbour*, and the bay where the cutter was attacked by the natives *Bloody Bay*. He also named the Huerta of Mendaña *Trevanion's Island*. Crowds of natives came off in canoes and attacked one of the boats, when grape-shot was fired from the ship. Carteret then made sail for Dampier's New Britannia. Captain Carteret was unduly prolific in the names he gave right and left, often to places already named by Mendaña. He called the whole Santa Cruz group *Queen Charlotte's Islands*. As he approached the main island of the group the land appeared to form two distinct islands, and to the southernmost he gave the name of *Lord Howe's Island*. He mentions the volcano of Mendaña as an island of stupendous height and conical shape, "the top of it shaped

* 'Voyage of Captain Philip Carteret in the sloop *Swallow*,' 1766-69.

like a funnel, from which we saw smoke issue, but no flame," he also called it *Volcano Island*. As he approached Santa Cruz he sighted the reef islands of Mendaña to the north-west, and called them *Keppell's* or *Swallow Islands*, and land to the south-west, which he named (Ostry) and *Lord Edgcomb Islands*. His longitudes are 75 miles too far to the east.

Carteret was followed, in 1768, by the French expedition of M. de Bougainville,* in two ships named the *Boudense* and *Etoile*; which passed to the southward of any of the land previously visited in these groups. On the 4th of May, the French ships came in sight of a beautiful island covered with trees, and of another to the southward, to which Bougainville gave the names of *Ile de Pentecôte* and *Ile Aurore* respectively. He tried to pass between them, but the wind was foul, so he doubled the northern end of Aurora, and, in doing so, sighted a small but lofty island to which he gave the name of *Pic de l'Etoile*; but it is the *Nuestra Señora de la Luz* of Quiros. Bougainville then determined to land, for wood and water, on an island to the westward of Aurora, but with threatening gestures the natives made signs to the French to keep off, and retreated into the bush. After cutting down some trees and getting in water, the French re-embarked, when the islanders came down to the water's edge and discharged a volley of arrows, slightly wounding one sailor. Most of the islanders had cutaneous diseases, for which reason Bougainville gave the island the name of *L'Ile des Lépreux*. The next day he found himself surrounded by land in all directions, and he called the group *L'Archipel des Grandes Cyclades*. He sailed through the strait between Mallicollo and Espíritu Santo, now called *Bougainville Strait*, on the 26th of May, and continued his voyage in sight of the Solomon group. Bougainville imagined that the strait he discovered was the same as the great bay of St. Philip and St. James described by Quiros, who, the French explorer suggests, concealed the fact of its being a strait to prevent others from attempting to complete his discoveries by passing through it. But this idea is erroneous and gratuitous. In 1769 Captain (Surville), another French commander, visited some of the Solomon Islands.

Captain Cook examined the group, to which he gave the name of the *New Hebrides*, during his second voyage, when the learned Mr. Forster and his son were with him.† On the 18th of July, 1774, the *Resolution* sighted the northern point of Aurora Island, and passed very close to it, when the elder Mr.

* 'Voyage autour du Monde, en 1766-69' (Paris, 1771), p. 242.

† 'Voyage Round the World in the sloop *Resolution*, Captain Cook, 1772-75.' By George Forster, F.R.S. (London, 1777), ii., p. 130.

Forster caught sight of the lofty "Pie de l'Etoile" through the mist. The whole of the next day was passed in working to windward between the islands of Aurora and Lepers; and on the 21st land was sighted, with columns of white smoke rolling up from the summit of an inland mountain. Both Captain Cook and Mr. Forster were enchanted with the beauty of these islands, and declared the groves to be the richest their eyes had beheld since leaving Tahiti. On the evening of the 21st they opened two islets to the south-east, one of which was a high volcanic peak; while at a great distance to the south appeared an island with three high hills. The *Resolution* then sailed towards the land to the westward, where the groves had the richest tints of verdure, coco-palms were scattered between them, and mountains rose far inland. The natives approached in canoes, waving green boughs, and the *Resolution* anchored in a bay, which was named *Port Sandwich*. Captain Cook was much interested to learn from the natives that the island was called *Mallicollo*, the very name of which Quiros had heard from the chief of Tanna. He was also told that the island where he had seen the volcano was *Ambrym*, that the high peak was *Pa-oom*, and the island to the south *Apeë*. After leaving *Port Sandwich* the *Resolution* stood towards *Ambrym*; on the 24th she was within half a mile of *Three Hill Island*, and in the evening was becalmed amidst a group which Cook named the *Shepherd Isles*, after his friend the Professor of Astronomy at Cambridge. All the ward-room officers, several midshipmen, and the carpenter were very ill from eating a fish which Mr. Forster calls a sea-bream (*Sparus erythrinus*), doubtless the same poisonous food which made the Spaniards of the ship commanded by Quiros so ill. Cook's officers suffered acute headaches, spasms in the bowels, vomiting, and diarrhoea, but luckily the doctor escaped, from having dined with the captain. The sufferers were in a deplorable state, and could not do duty for more than a week, the watches being taken by the gunner and boatswain; but the doctor did not resort to the violent remedies of his Spanish predecessor Andrada. Passing a high columnar rock named *The Monument* and *Two Hill Island*, they stood south, towards an island to which Captain Cook gave the name of *Sandwich Island*, while he called the two smaller islands off its northern shore *Montagu* and *Hinchinbrook*. He then ran to the south, and on the 4th of August was off *Erromango*, where the boats of the *Resolution* were very treacherously attacked by the natives. The captain ordered his men to fire, and killed several, while the swivel and cannon were fired from the ship. On the 5th, Captain Cook stood on to the island of *Tanna*, and anchored in a small snug harbour, which he named

Resolution Bay. The volcano was in sight, a hill of a conical shape, whence a column of heavy smoke rose from time to time, and every time it rose they heard a deep rumbling; while in the evening the flames blazed up, and the deck and rigging were covered with black ashes. Cook set out, with the Forsters, to walk to the volcano on the 14th of August, but was prevented by the natives. He sailed on the 20th, and on the 21st saw the islands of *Anatton* and (*Erroan*). On the 23rd he passed *Api* and *Ambrym*, and the north point of *Mallicollo*, and went through *Bougainville Strait* in the night, giving some small islets in the strait the name of *Bartholomew Isles*. He continued along the east side of *Espíritu Santo*, and opened the great bay of the Spaniards on the 25th, naming its eastern and western points *Capes Quiros* and *Cumberland* respectively. Captain Cook worked up to the head of the bay against a head wind; and one of his officers, Mr. Cooper, landed at *Quiros's* port of *Vera Cruz*, and saw the fine broad river *Jordan* of the Spaniards. The *Resolution* then sailed out of the bay. Doubling the northern end of *Espíritu Santo*, Captain Cook sailed down the western shore, and named the south-west point *Cape Lisburne*; standing once more into *Bougainville Strait* to complete the circuit of *Espíritu Santo* Island. He then stood away from the *New Hebrides Islands*, which he had cursorily examined during 46 days, and he recorded his opinion that the group was well worth the attention of future navigators. On the 4th of September Captain Cook discovered *New Caledonia*, and on the 15th he anchored off a district called (*Balade*). On the 24th he was off the eastern end of the island, and on the 26th he sighted a large island, which he called the *Isle of Pines*. The work of Mr. Forster contains a very full description of the *New Hebrides* islanders, their arms, ornaments, and physical characteristics.

The *New Hebrides* were next visited by the unfortunate expedition of *La Perouse*. The two ships which composed it, sailed from *Botany Bay* on the 26th of January, 1788, and their fate remained a mystery for forty years, when it was discovered that they had been wrecked on the reef round *Vanikoro* Island in a hurricane; that the survivors had built a brigantine, in which they had sailed away; but not a soul belonging to the expedition was ever seen again. In the same year, *Lieut. Shortlands* sailed from *Australia* in the *Alexander* along the *Solomon group*, giving the name to *Cape Henslow* on *Guadalecanal* Island.

The mutiny of the *Bounty* took place in the following year, and from May 14th to 15th, 1789, Captain *Bligh* passed through the northern islands of the *New Hebrides group* in an open

bout. He and his men were almost starving, but he justly deemed starvation to be preferable to being treacherously murdered and eaten by the cannibal islanders; so he did not venture to land. On the 13th, in Lat. $14^{\circ} 17' \text{ s.}$, he saw low islands, and passed several on his weary way westward, to which he gave the name of the *Banks Group*. Among them are the Santa Maria and others discovered by Quiros.

Captain Edwards was sent out in search of the *Bounty* in the *Pandora* sloop, and on the 13th of August, 1791, he passed between the islands of *Vanikoro* and *Tapoua* (Edgecombe of Carteret) of the Santa Cruz group, and discovered the islands of *Cherry* and *Mitre* to the eastward. The *Pandora* was afterwards lost on a reef in Torres Strait.

In September, 1791, two vessels, the *Recherche* and *Espérance*, sailed from Brest in search of La Perouse, under the command of Captain D'Entrecasteaux.* Coming from Tongataboo, they sighted the most southern islands of the New Hebrides group, Erroman and Annatom, on the 15th of April, 1793, and in the evening they saw the volcano of Tanna. D'Entrecasteaux asserts that Cook's longitudes are too far to the east. Sailing onwards, on the 17th he discovered the *Iles Beaupré* of the Loyalty group, and during the rest of the month he was at anchor at Balade, in New Caledonia. On the 9th of May D'Entrecasteaux sailed from Balade harbour, and on the 19th he sighted the southern point of the island of Santa Cruz. He passed the Edgecombe and Outry islands of Carteret (the Tapoua of modern charts) and found their positions to be very different from those given by that navigator, who passed them at a distance, and was disabled by sickness. D'Entrecasteaux fixed the positions on Santa Cruz Island more correctly, and then sailed along the southern side of the Solomon group. He died on board his ship on the 20th of July, 1793.

In 1796, the ship *Duff*, commanded by Captain James Wilson,† took out the first missionaries to Tahiti. Afterwards, on the 25th of September, 1797, the missionary ship sighted ten or twelve separate islands, two or three being of considerable size, and Captain Wilson named them the *Duff group*. They were, in fact, the islands, including Tannamaco, which were discovered by Quiros in 1606. The *Duff* then sighted Santa Cruz and Volcano Islands, the latter emitting a large and bright flame every ten minutes. This was on the 28th of September, and the *Duff* shaped her course onwards to the westward, sighting

* 'Voyage de D'Entrecasteaux, envoyé à la recherche de La Perouse' (Paris, 1808).

† 'A Missionary Voyage to the Southern Pacific Ocean, 1796-98, in the ship *Duff*, commanded by Captain James Wilson' (London, 1799), p. 296.

New Georgia. In the following year the East Indiaman *Barrell* sighted the island of Tucopia, previously discovered by Quiros, and in 1809 Captain Golownin visited Port Resolution and Tucopia.

In the early part of the present century, East Indiamen often made voyages from Calcutta and China to Hobart Town and Botany Bay, and in this way new discoveries were not unfrequently made. Thus in 1800 Captain Butler, in the *Walpole*, and in 1803 the *Britannia*, were the first to sight the Loyalty Islands. In 1813 Peter Dillon sailed as an officer on board the East Indiaman *Hunter*, from Calcutta to New South Wales. At Fiji a native of Stettin named Martin Bushart, and a Lascar named Joe, were found, who took refuge on board the *Hunter*, and they were both put on shore at the island of Tucopia. In 1826 Dillon had command of a ship of his own, named the *St. Patrick*, and hove-to off Tucopia on the 13th of May, on his way from Valparaiso to Pondicherry. He found Bushart and the Lascar still there, the natives having treated them with great kindness. Joe, the Lascar, had an old silver sword-guard. There were many things of European manufacture on the island, and the natives said that two ships had been lost on another island to the westward, many years before, called, as Dillon writes it, *Malicolo* (Vanikoro). He attempted to reach this place in May, but was becalmed, and eventually bore away for Calcutta. He was convinced that these clues would lead to the discovery of the fate of La Perouse, and on the 16th of September, 1826, he offered his services to the government of India, to clear up the mystery. The Governor-General, in Council, considered Captain Dillon's proposal favourably, and he received the command of the E. I. C. surveying-ship *Research*, with orders to follow up the traces he had found on Tucopia, and he sailed from the Hooghly on the 23rd of January, 1827.* After visiting Hobart Town, New Zealand, and Tongataboo, the *Research* sighted Mitre and Cherry Islands on the 4th of September, 1827, and arrived off Tucopia on the following day, where he found five Englishmen, who said they had deserted from a whaler. Dillon describes the people of Tucopia as an extremely mild, inoffensive race, hospitable and generous, with straight hair, and entirely different from the hideous savages of all the surrounding islands, except Cherry. This accounts for the kind treatment of Bushart and other wanderers who had taken up their abodes with them. Since the visit of Quiros no vessel had touched at Tucopia until the

* 'Narrative and Successful Result of a Voyage in the South Seas to ascertain the actual fate of La Perouse's Expedition.' By the Chevalier Captain P. Dillon (London, 1829, 2 vols.).

arrival of the *Hunter* in 1813. From the 13th of September to the 6th of October the *Research* was at Vanikoro, where Captain Dillon received a traditional account of the wreck of La Perouse's ships, and obtained many articles. Bushart returned to Tucopia, and the *Research* made sail to the eastward. Dillon landed on the island of Taponia, and then sailed along the northern side of Santa Cruz Island to Graciosa Bay, where he had an encounter with the natives. He says that the length of the northern side of Santa Cruz is 24 miles, 14 less than it is made by Carteret. Dillon returned to Calcutta on the 7th of April, 1828.

Captain Dumont d'Urville* heard of the discoveries of Dillon while lying at anchor off Hobart Town in December, 1827, in command of the French surveying-ship *Astrolabe*, and he resolved to make a thorough investigation of the fate of La Perouse on the spot. On the 8th of February, 1828, he sighted Mitre and Cherry islands, and on the 10th he was off Tucopia. Both D'Urville and Dillon give the native names of Cherry and Mitre Islands, as *Anuda* and *Futaka*, and they learnt from the Tucopians, who were of an excellent disposition, that all the surrounding islands, excepting Cherry, were inhabited by black woolly-headed cannibals, of whom they had a great horror. At Tucopia, D'Urville found Martin Bushart, who, however, refused to accompany him to Vanikoro, and three Englishmen who had deserted from the whaler *Harriet*, two of whom, named Hamilton and Williams, were allowed to embark on board the *Astrolabe*, and did good service as interpreters. Joe, the Lascar, was also at Tucopia. After making a fruitless search for the *Taumaco* of Quiros, D'Urville anchored at Vanikoro, and remained there, searching for further relics of La Perouse, from February 19th to March 17th, 1828. On the 14th of March a monument to the memory of the ill-fated expedition was completed. D'Urville obtained information respecting the Reef Islands discovered by Mendaña and Quiros, to the northward, and both he and Dillon give the native names of several islands. Santa Cruz is called *Indenney* (*Nitendi* ?); the Volcano Island, *Tinacoro*; two islands in the Duff group *Taumaco* and *Chicianu*; and among the Reef Islands were mentioned *Nukapu*, *Pileni* (*Bànabi* ?) and *Fonu-fonu*. Dillon and D'Urville gave names to 23 different points and bays round Vanikoro Island, and on the 17th of March the *Astrolabe* sailed from this island, which Dillon called *La Perouse* and D'Urville *Recherche*, and made sail for the Ladrones. D'Urville has given a full account of the islands of Tucopia and Vanikoro, and of their inhabitants, and

* 'Voyage de la corvette *L'Astrolabe* pendant les années 1826-29, sous le commandement de M. J. Dumont d'Urville' (Paris, 1831), Histoire iii. v.

a vocabulary and love-song in the Vanikoro language. In 1838 Dumont d'Urville again commanded an exploring expedition consisting of the *Astrolabe* and *Zélée*; and in November he visited some of the Solomon Islands, fixed several positions, and anchored in Astrolabe harbour in Ysabel Island.

Captain Belcher, in the surveying-ship *Sulphur*, coming from Fiji, sighted Erromanga, Annatom, and Tanna on the 20th of June, 1840, and anchored in Port Resolution. On the 24th he sailed, and sighted Erromanga and Sandwich Island, and on the 1st of July he sighted Guadalcanal in the Solomon group, but he did not touch at any of the islands, except Tanna. In April, 1846, Captain Le Mignon, in the French ship *Jupiter*, sighted Mitre Island and sailed thence to the east point of San Cristoval, and along the south side of the Solomon Isles.

In September, 1849, Captain Erskine in H.M.S. *Havannah* visited Aneiteum, Port Resolution, sailed round Tanna, anchored in and named *Havannah Harbour* in Sandwich Island, and, after touching at the Loyalty Islands, New Caledonia, and the Isle of Pines, returned to Sydney. Captain Erskine visited the New Hebrides and Banks groups again in 1850. There is some account of Captain Erskine's proceedings in the Appendix to the 'Journal' of the Royal Geographical Society for 1851.* Captain Denham† in the surveying-ship *Herald*, fixed several points in the southern part of the New Hebrides, and in the Solomon groups in 1853-4; but a more systematic survey is much needed.

All these expeditions, from Mendaña to Denham, covering a period of nearly 300 years, did little more than sail through the groups, and have deadly encounters with the natives. The three voyages of the old Spanish navigators accomplished as much as, or more than, any subsequent expedition. In his first voyage Mendaña made a more complete examination of the Solomon Islands than has ever been done since. Tumuaco and other islands in the northern groups have never been examined since Quiros was amongst them in 1606, and his harbour of Vera Cruz, in Espiritu Santo, has only twice been visited since his time. Next to the Spaniards, our most complete accounts are of Tanna and Mallicollo by Captain Cook, and of Tincopia and Vanikoro by D'Urville. But the New Hebrides and other groups to the northward are still very little known, and indifferently surveyed.

Of late years these islands have been more thoroughly explored, and brought more prominently to notice, through the agency of two very opposite influences; that of unscrupulous traders, and that of well-intentioned missionaries. In about 1840 a very lucrative trade sprang up in sandal-wood for the

* Vol. xxi. p. 222.

† See 'Hydrographic Notices, South-Western Pacific Ocean,' Nos. 2, 3, and 4.

supply of China, and at the time of Captain Erskine's visit, from ten to twenty vessels were engaged in it, and two establishments had been formed on shore for collecting it, one at Aneiteum and Erromango, the most southerly of the New Hebrides, and the other on the Isle of Pines. The men engaged in this sandal-wood trade were a reckless set of ruffians, and there were frequent attacks upon the natives, and retaliatory outrages. On Sandwich Island, in 1842, the crews of two British vessels shot down 26 natives who opposed the cutting of wood, and, having driven many others into a cave, they set fire to a pile of wood and rubbish at its mouth, and suffocated them all. All kinds of excesses were committed by the lawless adventurers, and numerous massacres were perpetrated by the islanders. Captain Erskine obtained a list of 14 vessels that had been engaged in these encounters between 1841 and 1848. In 1839 the London Missionary Society sent some native teachers from the Samoan Islands, with a view to the conversion, through their means, of some of the savages in the New Hebrides group; and they were established at Aneiteum, Tanna, and the Loyalty Islands. Messrs. Williams and Harris of the Samoan Mission, on landing on Erromango, in October 1839, were murdered on the beach, in revenge, it was supposed, for some outrage committed by sandal-wood traders; but the Samoan teachers continued at their work, and in 1849 they were visited by Bishop Selwyn. The New Hebrides Presbyterian Mission commenced their labours soon afterwards, and in 1852 Dr. Geddie published a version of St. Luke's gospel in the language of Aneiteum Island. There are now Missionaries on Aneiteum, Fotuna, Aniwa, Tanna, Erromango, Montagu or Nguna, and Espiritu Santo Islands. On Aneiteum all the islanders are Christians, on Aniwa there are 150, and on Fotuna 50 converts. These are the most southerly islands of the group. About eight years ago another Mission was formed, under the auspices of Bishop Selwyn, on a different principle. The new plan was to make yearly cruises among the islands, and to induce the people to allow their boys and young men to go back with the missionaries, to be educated, with a view to their returning home as Christians. This was the "Melanesian mission," over which Bishop Patteson presided. Their ground is north of that of the New Hebrides mission, in the Solomon, Santa Cruz, and Banks groups. Their station and school is in Norfolk Island, and the Bishop made an annual cruise in a yacht named the *Southern Cross*, touching at the different islands. Mr. Tilly,* who commanded her, took every opportunity of adding to our

* See 'Hydrographic Notices, Pacific Ocean (Western Part),' Nos. 21, 38, and 40.

knowledge of the islands, and the Reef Islands to the north of Santa Cruz, including *Lomlom, Nukapu, Pineli, Nivluli, Panavi, Tromelin, Nuponi, Analogo, Materna*, have been added to the chart on his authority. The chief missionary success of Bishop Patteson has been at San Cristoval or Bauro, one of the Solomons, and in the Banks Group. At *Mota* or *Sugar-loaf Island*, there is an ordained native teacher and several converts, and some impression has been made on the natives of *Vanua Lava*, where the anchorage was named by Bishop Selwyn, *Port Patteson*, in 1857, after the Melanesian Bishop. There are about 160 islanders at the missionary school on Norfolk Island.

The sandal-wood enormities of former years have been exceeded in the present labour traffic with its attendant kidnapping; which has arisen owing to the great demand for labour on the cotton plantations in the Fiji Islands and Queensland. In April, 1860, our associate, Dr. Berthold Seemann, who was sent out to the Fiji Islands to report upon their capabilities, by the Colonial Office, declared that they seemed to be made for cotton cultivation, an acre yielding 485 lbs. of the best New Orleans. The Fiji cotton proved to be of the qualities most desirable for British manufacture, and several plantations were formed in subsequent years. In Queensland the first cotton plantation was commenced near Brisbane, by Captain Towns, in 1863; and in 1866 he raised 183,630 lbs. of cotton. Thus the demand for labour arose both to the east and the west of the New Hebrides group, and its supply became a most lucrative business. Captain Towns was the first to have recourse to the importation of South Sea Islanders, sending one of his own vessels for the new labourers, and intrusting their engagement to a man named Ross Lewin, who had been long among the islands, and could make himself understood. Thus this labour traffic was commenced, and all the horrors of the old sandal-wood trade were renewed. In 1865 Commodore Sir William Wiseman, in *H.M.S. Curacoa* visited the islands.* On August 6th he was at Aneiteum, and from the 10th to the 12th the *Curacoa* was at anchor in Resolution Bay in Tanna, where a fire with shell and rockets was opened upon two villages, and 178 men were landed to destroy villages and plantations, and to smash all the canoes on the beach. The Commodore then continued his cruise, touching at Erromango on the 13th, and Havannah Harbour on the 17th, and sailing between Espiritu Santo and Lepers Island to Port Patteson in Vanua Lava. The *Curacoa* then stood along the northern coast of Santa Cruz,

* 'A Ride through the Disturbed Districts of New Zealand, &c.: being Selections from the Journals and Letters of Lieut. the Hon. Herbert Meade, R.N.' (Murray, 1871), p. 230.

with Bishop Patteson in the *Southern Cross* in company. In the previous year two of the Bishop's boats' crew had been murdered in Graciosa Bay, but he did not wish any punishment to be inflicted on the natives, so the *Curaçoa* stood on to the island of San Cristoval, in the Solomon Group. After visiting Marau Bay in Guadalcanal, and St. George's Bay in Ysabel, the Commodore returned to Erromango, and anchored in Dillon Bay on the 10th of September. On the 25th he fired 20 shells and 4 rockets into a village, and it was supposed that frightful damage was done by the bursting of a shell in a cave, where the people had probably taken shelter. The *Curaçoa* sailed thence through Havannah channel to Numea in New Calodonia, and proceeded to Sydney on the 8th of October, 1865. Mr. Blenckley accompanied Sir William Wiseman on this occasion, and made large and valuable ethnological collections. It is not probable that this cruise was productive of any beneficial effect as regards the intercourse between the Europeans and islanders.

In April, 1867, Captain Luce of H.M.S. *Esk*, reported the loss of several vessels and numerous murders in revenge for islanders carried off to Queensland and Fiji. It was then found that 382 islanders had been landed in Queensland, most of them under engagements to work for three years, and that 78 had returned. A petition, signed by eight of the New Hebrides Mission, was presented in February, 1868, to the Governor of Queensland, denouncing the labour traffic and declaring that many labourers had been carried off by force. This led to the passing of the "Polynesian Labourers Act" by the Queensland legislature, in March, 1868; which was intended to enforce the registration of labourers, their proper maintenance and support, and their return at the expiration of contracts. But it is said to be of little use in ameliorating the condition of the unfortunate islanders, and the labour traffic, with its attendant kidnapping, continues in full vigour. Plantations have also been formed on the New Hebrides themselves, at Aneiteum, Tanna, and Vate or Sandwich Island, and there is a whaling station at Erromango.

In 1868 H.M.S. *Blanche*, commanded by Captain Montgomerio was sent to investigate the massacre of the crew of an English vessel in the Solomon Group. Sailing from New Caledonia, she touched at Wanderer Bay in Guadalcanal, and then proceeded to New Georgia, the scene of the outrage, where a village was shelled and burnt. The *Blanche* returned by the east coast of Guadalcanal and San Cristoval to Port Patteson in Vanua Lava, and thence, by Sandwich Harbour in Mallicollo, and Dillon Bay in Erromango, to New Caledonia. In the same year Commodore Rowley Lambert in H.M.S. *Challenger*, coming from

Fiji, visited Tanna and the other southern islands in the New Hebrides Group. In 1869 the *Rosario*, then commanded by Captain Palmer, also touched at the most southerly islands of the group, which are now well known.

The cruise of the *Rosario*, from October 1871 to February 1872, was undertaken in consequence of the increasing complications, caused by the lawless acts of vessels engaged in the labour traffic, and of consequent retaliations on the part of the islanders; and the duties connected with the investigation of these questions necessitated visits to almost every island in the Santa Cruz and New Hebrides groups. Thus many places were visited at which no man-of-war had ever touched before, landings were effected on islands scarcely ever touched at, and long walks were taken into the interior of many little-known islands.

These islands lie in a N.N.W. and S.S.E. direction, along a distance of about 700 miles, between the parallels of $9^{\circ}45'$ and $20^{\circ}16'$ S. latitude, and the meridians of $165^{\circ}40'$ and $170^{\circ}30'$ E. longitude. The large island of New Caledonia lies at a distance of 200 miles to the south-west of the southern part of the group, and the Solomon Islands are about the same distance due west of the most northern part; while the Fiji Islands are the nearest land to the eastward. There are three distinct groups, divided from each other by intervals of 60 miles of sea; namely, the south New Hebrides, the north New Hebrides and Banks Islands, and the Santa Cruz, Duff, and Swallow groups; while east of the latter, at a distance of 60 miles, are the isolated islands of Tucopia, Cherry, and Mitre.

The southern New Hebrides consist of the following five islands:—

Ancitum, 27 miles long by 21 broad; highest peak, 2788 feet.

Fortuna, 4 miles long; highest peak, 1931 feet.

Tanna, 23 miles long by 40 broad; highest peak, about 3000 feet.

Aniwa, highest peak, 300 feet.

Erromango, 30 miles long by 22 broad; highest peak, 3000 feet.

The northern New Hebrides and Banks Islands, which are in reality but one group, consist of about 35 islands, besides numerous islets and rocks; *Espirito Santo*, the largest, being 75 miles long by 40 broad, and the average size of the islands being about 60 miles round. Commencing from the south, the larger islands of the group are as follows:—

Vate or Sandwich Island.

Api, 25 miles long by 70 broad; highest peak, 2800 feet.

Mallicollo, 50 miles long by 20 broad.

Ambrim, 22 miles long by 17 broad; highest peak, 3500 feet.

Pentecost, 30 miles long by 5 broad; highest peak, 2000 feet.

Lepers.

Aurora, 30 miles long by 5 broad; highest peak, 2000 feet.

Espíritu Santo; about 70 miles long by 40 broad.

Santa María; highest peak, 2000 feet.

Vanua Lava (pop. 1500); highest peak, 2800 feet.

Torres Islands, five in number.

And the principal smaller islands are:—

Nguna or *Montagu*.

Hinchinbrook.

Three Hills (or *Mri*), 6 miles long by 2½ broad; highest peak, 1850 feet.

Paama; highest peak, 1900 feet.

Loperi; highest peak, 5000 feet.

Bartholomew.

Star Peak; highest peak, 2900 feet.

Mota (or *Sigui-loef*); pop. 2000, 8 or 10 miles in circumference; highest peak, 1350 feet.

Valua (or *Saddle*), about 8 miles long; highest peak, 1800 feet.

Ureparapara, nearly round, about 12 miles in circumference; highest peak, 1950 feet.

Vatu Rhandi; highest peak, 100 feet.

From Vate and Nguna to Mallicollo and Ambrym the islands form a cluster; they then, as it were, fork into two lines, forming a large bay, with Mallicollo and *Espíritu Santo* on the west, and Pentecost and *Aurora* on the east side; while the Banks Islands again cluster at the northern entrance to this bay.

Both New Hebrides groups consist, with the exception of the Torres Isles, of islands of volcanic formation; but the Santa Cruz group, besides islands of volcanic formation, also contains, in its northern part, numerous reef islands. The volcanic islands are *Santa Cruz*—itself the largest, about 24 miles by 10—*Vanikoro*, *Tevai*, *Lord Howe*, *Tapua*, and *Tinakula*. The reef islands are all further north. The most northerly of these groups, those discovered by Quiros, and named the Duff Islands by the old missionary ship in 1796, are almost entirely unknown; and the account of one of them, called *Taumaeco*, by Quiros and Torres, is almost the only knowledge we at present possess. It is, however, reported that one or two are of volcanic origin.* The other reef islands to the west, which were discovered by one of Mendaña's ships in 1596, and named Swallow Islands by Captain Carteret, were first examined by Bishop Selwyn in 1856 and 1857, and afterwards by Bishop Patteson and Mr. Tilly in the *Southern Cross*. There are about a dozen, the largest of which is *Lomlom* Island. Their names are:—

Lomlom, 5 miles long by 1½ broad; 300 feet high.

Fromelin.

Sand Islet; 10 feet above water.

Pileni, 1 mile, 100 feet.

Nivoluli, 1 mile, 120 feet high.

* See 'South Pacific Directory.'

Panari, well wooded.

Nukapu; 1 mile long.

Nimamu, a small round bold-looking island; 200 feet.

Nupani.

Andlogo.

Matema.

Round.

These reef islands occupy an extent of about 42 miles in a west by north direction from *Nimamu*, the most south-eastern of the group, to *Nupani*, the most north-western. They are from 20 to 200 feet above the sea, and extensive reefs stretch out, some from their lee and others from their weather sides. Whilst proceeding round the south side of the reef islands, and as far as *Nukapu*, I kept continually sounding, and got no bottom with 120 fathoms of line, the water being deep close alongside the coral reefs.

The three small islands to the eastward are isolated, and can scarcely be said to belong to the groups, being separated by about 60 miles. They are:—

Anuda (*Cherry*), 300 feet high; $1\frac{1}{2}$ mile round.

Putaka (*Mitre*), 450 feet high; a barren rock.

Tucopia.

Although situated between New Caledonia and the Fiji Islands, which are two of the most extensive coral regions in the world, the New Hebrides have scarcely any reefs; and the first that are met with, coming from the south, are those round the island of Vanukoro, in the Santa Cruz Group. This absence of coral is attributed, by Dana, to the destruction of the zoophytes by heat, consequent on volcanic action. Submarine eruptions, which are frequent as long as a volcano near the sea is in action, heat the water and destroy whatever life it may contain.

The line of volcanic activity in these islands is, in the general direction of the group, about S.S.E. to N.N.W. A line drawn from the active volcano of Tinaenla to that of Tanna, a distance of 600 miles, nearly passes through the volcano of Ureparapara, the boiling springs of Vanua Lava, and the two active craters of Ambrym and Lopevi. The line also passes through Santa Cruz, Santa Maria, the southern part of Pentecost Island, and Api; on all of which there are cone-shaped hills, which have the appearance of extinct volcanoes. The *Rosario* was becalmed off the volcano of Tinaenla during the whole of the night of November 28th, and passed it again on the 29th. It is a perfect cone, rising out of the sea to a height of 2200 feet; with the base, to about a third of the way up, clothed with verdure, and the upper two-thirds quite bare. During the two

days there were outbursts of flame and smoke at intervals of from ten to fifteen minutes, and in the intervals the stream of burning lava poured down the N.W. side of the crater in a continuous brilliant stream into the sea. This volcano appears to be in a permanent state of activity, for in 1595 Mendaña found that the same eruptions were taking place; and though Captain Carteret only records volumes of smoke as issuing from the crater in 1767, it was emitting a large and bright flame when the *Duff* passed the island in 1796. Following the line of volcanic activity to the south, the next phenomenon is met with on the island of Vanua Lava, where there are boiling springs about half-way up the central hill, on its northern side. We could see the steam rising up from amongst the trees, and mingling with the dense clouds overhead. Further south, on the same line, is the volcano of Ambrym. We were becalmed at a distance of 3 miles from the north coast of the island, and about 14 miles from the crater, as the crow flies. Explosions were distinctly heard at intervals of 15 minutes, some louder than others. The ship was thickly covered with fine dust of a brownish colour; but the volcano itself was concealed from our view by an intervening range of hills. Captain Cook mentions having seen columns of white smoke rolling up from the hills; but, at the time that we were off the island, the clouds were so low that I was unable to distinguish the smoke with certainty, though I anxiously watched the line of hills for three hours. When on the south side of the island, however, we saw the Ambrym volcano blazing up several times during the night of the 29th of December. Lopevi, a small island to the south of Ambrym, closely resembles Tinaula. It also is a perfect cone, rising from the sea; but it is nearly double the height of Tinaula, and the base is proportionately larger. The summit of the crater was carefully watched during two days and nights, but heavy clouds were generally hanging round the summit, which obscured the view. When, at intervals, the peak was clear, I observed a thin film of smoke rising into the air; but no explosions were heard, and, as compared with Tinaula, Ambrym, and Tanna, the volcano of Lopevi was quiescent at the time of our visit.

The most powerful volcano in the group is that of Yasowa, on the island of Tanna, the most southerly in the line of volcanic activity. It is about a mile from the sea at Sulphur Bay, but eight miles from the head of Port Resolution. We landed at half-past six in the morning, with the intention of visiting the crater, accompanied by Mr. Neilson, the missionary. On approaching the summit of the first range, at a height of not more than 500 feet above the sea, we came to a series of patches

where there were hot sulphur springs near the surface, and steam was oozing from numerous crevices. In proceeding through very thick bush, and in crossing ranges of undulating hills in the direction of Mount Yasowa, we heard loud reports, sounding like broadsides from a line-of-battle ship, at rapid intervals. After walking for about seven miles and a half we suddenly emerged from the bush, and came upon an open space covered with loose scoria, with the bare cone rising about 600 feet above the place where we were standing. After scrambling up the steep side of the mount, through loose scoria, for about 300 feet, we came to the foot of the actual crater. Here the native guides refused to proceed further, and warned us that, if we persisted in attempting the ascent, we must preserve perfect silence. These Tannese believe the volcano to be an evil spirit, whose anger would be aroused by any noise not produced through his own mighty throat. On reaching the upper lip, we found ourselves on a ridge, about 14 feet wide, with a perfectly perpendicular cliff on the inner side. The opening is about 700 feet long by 500 wide, and I judged that the depth, from the ridge to the burning lava, was about 200 feet. During the intervals between the explosions there appeared to be three distinct openings from which the explosions took place; and after the explosions we could see sheets, as it were, of liquid fire flowing back into their beds. I timed the explosions, which took place every three minutes. They were accompanied by a deafening report, the shocks were distinctly felt, and huge masses of scoria were hurled up to a height of fully 1000 feet. The great mass fell back into the crater, but some pieces fell upon the ridge, to leeward of the place where we were standing. Great clouds of dust and smoke were sent up at the same time, which at times obscured the summit of the mountain, in looking at it from seaward. At the foot of the volcano, on the north side, there is a fresh-water lake about a mile long, and 200 feet above the level of the sea.

The line of volcanic activity has the largest islands on either side, a little apart from the actual eruptions; but the numerous conical peaks in every part of the groups seem to indicate a period of activity on every island. The water is very deep round all the shores, and the hills, rising abruptly from the sea, are clothed with dense vegetation. The coco-nut trees are not confined to the beach, but often grow on the hillsides, and are seen in clusters all over the inland valleys. This is especially the case on the island of Ambrym. Trees, yielding excellent timber, grow on the slopes of the hills; such as the weeping iron-wood (*Casuarina equisetifolia*, Forst.), *Casuarinas*, and the

beautiful candle-nut trees (*Aleurites triloba*, Forst.). Graceful ferns and branching grasses cover the ground, and numerous flowering shrubs form a dense undergrowth. I had no opportunities of examining the *flora* at a greater height than 2000 feet, and am not able to describe the change from tropical to mountain forms. The New Hebridans make neither mats nor cloth, but both the screw-pine and the paper mulberry are found on the islands, and the distinct race inhabiting Cherry Isle have *tapa* cloth which they prepare from the latter plant. The rich vegetation, which entirely covers the islands, is varied and beautiful; and every voyager, from the days of Mendaña, has been enchanted by the loveliness of the scenery. The groups farther to the eastward, and beyond the 180th meridian, to Tahiti and the Marquesas, appear to have been dependent, for their *flora* and *fauna*, on the waifs and strays that floated or were wafted to them from distant continents. But the Solomon and New Hebrides groups, together with the Fiji Islands, possess a rich and varied *flora* and *fauna* peculiar to themselves, which has not hitherto been thoroughly examined, although the admirable work of Berthold Seemann is an important contribution towards a more complete knowledge of this interesting subject. I regret that I am unable to add any additional information, and that my very absorbing duties entirely precluded any attempt on my part to make collections in natural history.

The reef islands, in the northern part of the Santa Cruz Group, are not regularly formed coral islands, with central lagoons, such as are formed in Torres Straits; but are raised upon the reefs themselves, and vary in size from small rocks or islets, to islands several miles in circumference. They are generally covered with dense scrub, overtopped by coco-nut trees, and wherever this is the case, as at Lom-lom and Nukapu, they are inhabited.

The deep and beautifully transparent sea which surrounds the islands abounds in fish of various kinds; the usual yield, when we hauled the seine, consisting of mullet and bream. At Tanna we were warned, by a native, of the poisonous fish which had so serious an effect upon those who partook of them, both on board the ship of the old Spanish navigator Quiros, and in that of Captain Cook: but none were caught by us. On the island of Fotuna, which has no reef, and is surrounded by deep sea, I looked down from the summit of a perpendicular cliff into the transparent water, and saw fish swimming among the rocks, of the most brilliantly bright green and blue colours. Attracted by the fish, the bare and unfrequented rocks are the haunts of myriads of sea birds of every kind that is known

in the tropical zone of the Pacific; and, in the woods, there are large pigeons with gay plumage.

The inhabitants of the New Hebrides and Santa Cruz groups belong to that Papuan or Melanesian race which may be said to extend from New Guinea to the 180th meridian, where, in the Fiji Islands, it mingles with the stronger and more handsome Polynesians. In the New Hebrides some differences are discernible as regards the inhabitants of the various islands. As a rule the men of the southern New Hebrides are taller and better developed than those farther north. In Tanna there is a finer and stouter-made race than in any of the other islands. The Erromango men are smaller; and in Santa Cruz the men are all short and slight, but wiry and active, and of a cheerful disposition. In Tanna very few men were seen who were taller than 5 feet 7 inches, while at Santa Cruz none were seen to exceed 5 feet 5 or 6 inches. At Espiritu Santo the men appeared to be intelligent, but they were not equal, as a race, to the Tannese.

The New Hebrides islanders are not a good-looking race. The forehead is low and receding, the cheek-bones and face broad, the nose flat, but not so flat as the nose of an African negro, and large mouth. The hair is woolly, and the grown men have close woolly beards and whiskers. The skin is sooty or nearly black, and cutaneous diseases are very prevalent. In most of the islands they are fond of painting the face and body with red ochre, white lime, and a black colour, all mixed with coco-nut oil, in oblique bars. They make large holes in the ears, whence to suspend ornaments; and they raise scars on the breast and arms. Various ways of dressing, or ornamenting the hair, prevail in the different islands; the most extraordinary being that which is the fashion in Tanna. Very small tufts are bound round with the stalk of a grass, so that a small piece is left to curl over the end of the binding. The whole of the head of hair is dressed in this way, and it is said that the operation takes three or four years to complete. In most of the islands it is a common, though far from a general custom, to colour the hair with *chunam* or turmeric, so as to give it a yellow tint; and at Espiritu Santo the warriors fasten a cock's tail-feathers at the back of their heads. Round the neck they wear necklaces made of human teeth, shells, and coco-nut. At the island of Santa Cruz they wear large tortoise-shell rings through the noses, with a chain of seven or eight, and sometimes as many as twelve in each ear, hanging down over their shoulders. Breastplates made of white shell, and of various sizes, from 5½ to 9 inches in diameter, are also worn by the chiefs of the Santa Cruz and Swallow groups. In most of

the islands one fore-arm is ornamented with a bracelet, often of shell-work and coco-nut, worked in zigzag patterns. In the Solomon Islands they wear a very large shell armlet. With the exception of these ornaments, and of a string fastened tightly round the waist, to which the apron is secured, both men and women go perfectly naked.

I saw two Albinos, one a male, belonging to the island of Mallicollo, the other a female, a native of the island of Nguna, the latter without exception the most hideous and repulsive-looking woman I ever saw. Her skin was as fair as any man's in the ship, with huge red blotches or freckles over the face and arms, wool of a yellowish colour, eyes small, receding, and very weak, of a pinkish hue; nose flat, and mouth large, with thick lips. This delicate creature was one of the wives of a chief at the island of Nguna, and had been stolen by white men, not for her attractions, but for the sake of her labour, to work on a plantation. I released her from bondage and, after having had the pleasure of her society for three or four days, restored her to her heart-broken husband,

The value of a wife, amongst these islands, is generally estimated at about three pigs, which, when a man is able to get them, entitle him to the hand of a dusky beauty. The men do little or no work, beyond fighting, hunting and fishing, except when they harvest the yearly crops of yams. The signal for planting this crop is the ripening of the *Erythrina India* in July, when rows of hillocks are thrown up with staves, on the top of which pieces of old yam are set up, which soon begin to sprout. In a month they require reeds on which to climb; in February they begin to ripen, and the crop is taken in March or April. The people count by yam crops instead of years, and when they agree to go as labourers to Queensland or Fiji, the time is counted at so many yams. Their chief food is yam mixed with coco-nut. Taro is also grown on most of the islands, generally on irrigated land, but sometimes as a dry crop. It is fit for eating at about the time when the yam crop is exhausted. The flesh of pigs is consumed, and occasionally fish and fowls, but always at their large feasts; and whenever human food can be procured, it is much sought after. All the men are habitual *kava* drinkers.

The huts vary in size on the different islands; some being large, commodious, and well ventilated; others small, low and dirty. They are all roofed with the leaf of the coco-nut tree, some circular, others oblong or square, and they contain no furniture of any description. On the island of Santa Cruz, Mendaña describes them as circular, and resting on a central pole exactly as they are built at the present day. In the Banks

Group the houses consist of three rows of posts, the two outer ones 5 feet clear of the ground, and the centre one 15 feet, each row supporting a horizontal beam fastened by coco-nut fibre, with other beams meeting diagonally on the centre row. The roofs are of coco-nut leaves with projecting eaves, and the walls of matting.

The property of the islanders consists in land and coco-nut trees; and theft, as well as murder, is, I was informed, usually punished with death.

At some of the islands I have seen idols which they profess to worship; but I believe that they have little or no idea of a divinity or a hereafter. In 1595 Mendaña's historian tells us that on the island of Santa Cruz there was, in each village, a large house containing rudely-carved wooden images in half relief, and Mr. Dillon mentions that in Vanikoro there were large houses, in each village, set apart for the use of disembodied spirits. I had no time to investigate this interesting part of the subject, and I believe that much may yet be learnt respecting the superstitious ideas of these islanders.

The languages or dialects, in the different islands, appeared to us to be totally distinct; and, on some of the large islands, such as Espiritu Santo, a man from Cape Lisburne, at the extreme south, is unable to make himself intelligible in a village 40 miles up the coast. Latham says that there are also at least two dialects in Erromango. Quiros is said to have collected vocabularies of the language in Taumaco (Duff Group); and vocabularies in the Tanna and Mallicollo dialects are given by Cook. D'Urville collected a vocabulary of the Vanikoran dialect, and gives a specimen of a love song. Dr. Geddio published the Gospels of St. Luke and St. Mark at Sydney in 1852 and 1853, in the language of Aneiteum, the most southerly of the New Hebrides Islands; and there is a manuscript grammar of the Tanna language by Mr. Heath. It has a peculiar form by which three persons may be spoken of, distinct from dual or plural, and abounds with inflections. Captain Cook remarks upon the harsh sound of the New Hebrides dialects, and notices a peculiar sound formed by the shaking and vibration of *lrr* at Mallicollo, which, however I did not notice.

The islanders are very fond of dancing, to the accompaniment of a plaintive air, and in admirable time. All voyagers have noticed this love of dancing. The companions of Quiros observed it, and Captain Carteret mentions having seen large numbers of people on Santa Cruz island, dancing in a ring.

Their arms consist of bows and arrows, spears and clubs; but on the southernmost islands of the New Hebrides Group, many

of the men are now armed with guns supplied to them by traders engaged in the labour traffic, who give them as wages to returning labourers, and as bribes to the chiefs for allowing the traffic. On some islands, where there has been much intercourse with white men, they have converted the heads of axes, which they have received in exchange for yams, &c., into formidable-looking tomahawks which, in the hands of brave and skilful men, are most dangerous and unpleasant weapons.

The clubs are of different shapes, and are generally wielded with one hand, though they also have large double-handed ones. At Erromango the star-headed club is the most common, while in the northern islands the plain smooth clubs, some with knobs or buttons at the end, are most in vogue. Clubs in shape of canoes are seen at the Santa Cruz Islands. At the Solomon Islands they have sharp two-edged clubs, grafted over with a sort of sennit, and some of them are very handsomely finished off. The most valuable clubs are made of *Casuarina* wood, and are four feet long, straight and polished. One kind has a flat piece projecting at right angles to the handle.

The bows are made of *Casuarina* wood, and are well polished, and about 5 feet long. They are drawn from the shoulder. The arrows are of reed and vary in length, the shortest being 3 feet 6 inches and the longest 4 feet 6 inches. Many of them are tipped with human bone, a peculiarity which is recorded by the Spanish navigators in 1595, and these have several barbs. Others are plain sharp-pointed weapons; but the only arrows that I have seen with feathers are those used for the purpose of shooting fish and birds. Some of the latter are merely blunt round-topped bolts. All the arrows used in war are poisoned; but I have been unable to ascertain the nature of the poison, or whether it is animal or vegetable; though I was told on good authority that, on the death of a native, the arrows are stuck into the kidney fat of the corpse, and allowed to remain until decomposition sets in. Men wounded by these poisoned arrows generally die from tetanus. Mr. Dillon has a story that at Vanikoro the poison is obtained from a nut the size and shape of a mango, that they break the shell, scrape the kernel with the thumb nail, and rub the juicy substance, mixed with lime, on the arrow head. He adds that he took 200 of these nuts to the Botanical Garden at Calcutta. But as Mr. Dillon admits that a pig, wounded with an arrow so poisoned, remained in perfect health, I am inclined to think that he was taken in. Dr. Seemann says that, in the Fiji Islands, vegetable poisons are extracted by the natives, who make a profound secret of the art. In the southern islands they use cylindrical covers of

leaves as quivers; but in the north they carry a handful of about 7 or 8 arrows in one hand, which they put down when they take aim.

The spears are from 12 to 18 feet in length, and are generally barbed at a distance of about 3 feet from the tip. Some are very handsomely carved. They are very expert in the use of these weapons, and in one instance, at Tanna, a man was asked to take a shot from the quarter-deck at the fore topmast studding-sail boom, a distance of about 90 feet. The arrow struck exactly at the part aimed at, on which he shot off a second arrow, and cut the first out of the boom; both falling into the sea.

During their engagements with each other, one of which I witnessed in Byron Bay, at Santa Cruz Island, they kept continually shouting, moving and dancing about, so as not to show a steady mark to the enemy, stopping merely to fix and discharge their arrows, which they can send to a distance of about 120 yards. Each individual apparently fights on his own account, and under no leadership or regular order of battle. The chiefs, however, occasionally assign a mark to each of their men. Before making an attack there is a peculiar warning shout or cry, on hearing which the women and children immediately retire out of danger. Their disappearance is a sure sign that treachery is intended. As we sailed along the coast, fires were lighted, one after the other, on the hill-tops, apparently as signals. The same thing is mentioned by Captain Cook and other voyagers.

On Santa Cruz and Nukapu they have regular fortifications, consisting of stone breastworks about 4 feet 6 inches high, built in a semicircular form, and thrown up in alternate lines, in front of the villages, which are for the most part built near the sea. I examined these breastworks on the island of Nukapu; and both the historian of Mendaña's voyage, and Captain Carteret, describe exactly similar works on Santa Cruz Island. Carteret, who only saw them from his ship, describes them as built in salient and retiring angles; but in reality they are semicircular and isolated, and merely have the appearance of continuous lines, because the rows are built alternately, the rear ones filling up the intervals left in front.

The canoes are small, not being more than 20 to 30 feet long, and they are all fitted with outriggers. They generally contain two or three people, though I saw some, at the Solomon Islands, which were over 90 feet in length. The islanders are very expert in handling these canoes, and I was surprised at the dexterous manner in which I saw a couple of islanders right one

of the canoes that had been capsized. They use short paddles with cross handles and long blades.

The islanders are a merry, cheerful race, though easily alarmed. When the ship came into Byron Bay, at Santa Cruz Island, she was immediately beset by about 150 canoes, containing some 300 people. Shortly after we anchored the bugle sounded to evening quarters, on which the ship was instantly deserted, and it was some time before confidence could again be established. But they had no sooner returned, and found that no harm was intended to them, than the order was given to send the top-gallant-masts down; at the word "Aloft" they saw the rigging crowded with men, and a panic again ensued among the natives, who did not return until they saw the yards and masts coming down. On the following morning we were engaged in clearing the after-hold, when several of the natives began to help in manning the whip, which seemed to give them great amusement, though they did little work, always hauling at the wrong moment, and not pulling when required. The fiddle and bugle were objects of great curiosity in their eyes.

One of the most interesting points connected with the natives of these islands is the way in which the handsome Polynesian race seems to dovetail among the Papuans or Melanesians of the New Hebrides. Several islands are certainly inhabited by Polynesians, which belong geographically to the Melanesian groups. I landed on Cherry Island, and found that it was inhabited by a handsome and friendly Polynesian race, with straight hair. One man was 5 feet 10½ inches in height, and weighed 228 lbs. The population was about 200. The island of Tecopia is inhabited by the same race. Dillon and Dumont d'Urville describe the Tecopians as an extremely mild and hospitable people, numbering about 400 souls, under four chiefs. It would appear also, from the accounts of Quiros and Torres, who visited them in 1606, that the Duff Islands are also inhabited by the same Polynesian race. It would not only seem so from their kind and hospitable character, but the inhabitants of one isle, called *Chicayana*, are distinctly stated to have long, straight hair. In the voyage of the *Duff* these people are described as stout and well built, with copper-coloured complexions. With regard to the Swallow or Reef Islands, I was under the impression that the inhabitants belonged to the Melanesian race. The men who came alongside, off Lom-lom, the largest of the group, certainly had woolly hair, and were like the people we saw at Santa Cruz. At Nukapu I only saw the men's heads behind a stone breastwork, with a poisoned arrow pointed at me, so that I could not make a very leisurely examination; but they also certainly appeared

to have black Papuan skins and woolly hair. I have since read that the late Bishop Patteson found that they spoke a dialect of Maori, and he classed them among the Polynesians; and this appears rather to increase the puzzle, if the adjacent island of Lom-lom is inhabited by Melanesians. The men of Tecopia expressed to D'Urville the greatest abhorrence of their woolly-headed neighbours of the New Hebrides and Santa Cruz groups, so that they can scarcely live otherwise than as enemies to each other; and their mingling in small islands of the same group becomes all the more curious. The Cherry Island people are cleanly, they manufacture *tapa*, make very fine matting, and form a contrast in every way to the filthy savages of the New Hebrides and Banks groups. It would be a very interesting point to ascertain the exact limit of the two races, and to discover the Polynesian group to which the Cherry Islanders and Tecopians are most closely allied, as regards language and traditions. Time did not admit of my even attempting to investigate this and many other points of great interest; but I feel sure that there is much still to learn which would well repay the study, and that future visitors to these islands will have before them a very important field for geographical and ethnological research.

IX.—*Summary of Observations on the Geography, Climate, and Natural History of the Lake Region of Equatorial Africa, made by the Speke and Grant Expedition, 1860–63.* By Lieutenant-Colonel J. A. GRANT, F.R.G.S., C.B., C.S.I.

THE late Sir Roderick Murchison, our respected President, after presenting me with the Patron's medal of the Royal Geographical Society, impressed upon me the necessity of giving, for publication by the Society, some account of the journey through Africa, made in company with Captain Speke.

He had two reasons for this: one, that there ought to be a "quid pro quo;" and the other, that Captain Speke had made only a very small contribution, which appeared in the thirty-third volume of the Society's Transactions.

I have hitherto hesitated to comply with Sir Roderick's request; but I feel now that the duty is incumbent upon me, as the survivor of the expedition; and I submit these notes, with due respect, to the Royal Geographical Society.

True, Captain Speke's contribution of twenty-five pages was small when the vast extent of country traversed—the large field for description—is taken into consideration; but, when we

examine the map accompanying his memoir, we find that the country is so distinctly delineated, from his own observations and from information obtained on the spot, that, as far as geography is concerned, he had nothing more to say; the whole is seen at once upon a single sheet.

However, the Society were not of this opinion, and have, in a note at the head of Speke's paper, expressed their regret that Captain Speke had given so short an account of his important journey. I therefore feel invited to supply the blank and rectify the omission, which, I am bound to say, was never intentionally made by my lamented companion.

It may be stated here that he also contributed to the Society his work, entitled 'The Discovery of the Source of the Nile,' all his sketches of the country, of its animals, birds, and fish, and also made over to different scientific bodies every species of the Fauna or Flora collected. The country between Zanzibar and Kazeh has been fully described in Captain Burton's 'Lake Regions;' but, onwards to the Nile and Gondokoro, there may still be matter of interest untold and welcome to the members of the Society.

We shall therefore commence at Kazeh, lat. 5° s., long. 33 E., where the expedition arrived upon the 24th of January, 1861, having been detained on the journey from the coast by the desertion of our porters, and by a war that was raging between the inhabitants and the coast traders residing at Kazeh. It was not our business to interfere in these quarrels; we did not attempt to assist either side, and met with consideration from both. The leader—or rebel chief he might be called—of the natives came into our camp with a few followers and might have plundered all our property, while we, confident in our safety, were out shooting. The other, or Arab side, gave us a right hearty welcome, sending us porters and provisions while we were destitute in the forest, and meeting us with their followers on our approach to their settlement.

The foremost in kindness was Moossah, a native of the Indian territory of Kutch, in Bombay. Upon the day of our arrival at Kazeh, he led the way through a noisy throng and conveyed us to his house. Here a gay gathering of the influential traders in slaves and ivory, in full durbar dress, had assembled to greet us. The faces around me were all strange, but I had not much difficulty in picking out from among them a face and character I had heard so much of: old Snaay, the slave-dealer and cattle-lifter, with his long lean face and determined lip, was unmistakable. He looked uncomfortable and fidgeted about, but we soon had it explained to us that he was anxious for the interview to terminate, as he was leaving then and

there upon a campaign against the "rebel" natives, who had lately plundered him of twenty-five barrels of gunpowder. He asked us why we had not brought the rebel chief into Kazeh, dead or alive, and so engrossed was he with his expedition, that, though Speke presented him with a valuable gold watch by Macabe, set in turquoise, few words of thanks were uttered, and the old gentleman left, never to return.

These miserable wars in Central Africa originated, we were told, in a quarrel which arose between the slave of an Arab and a native of the country. They fought over some water at a well; the Arab slave was killed, and his master took revenge against the village. Other Arabs went to the support and other villagers helped to fan the flame, consequently, through these constant interchanges of "paying off old scores," there is never peace, neither will there be until the country has a settled government.

The evil effects of these fights tell disastrously, not only upon all those traders who caused the disturbances originally, but upon all persons travelling through the country. If a caravan—we will say like ours—is marching, the porters desert in batches or in a body as they approach the residences of the Arabs, for, like all mortals, they fear capture or death. The people in the villages have been taught to detest every trader and every traveller, for they have suffered bitterly by the loss of their slaves and their herds, and will not readily render assistance to a caravan.

This same system has been carried on for many years upon the Nile between Khartoom and Gondokoro. Only a few years ago a boat full of armed men would land for plunder, and decamp with it, perhaps with impunity; but the next boat and every other boat would be attacked as it passed the spot, or whenever an opportunity offered.

I would therefore here emphatically protest against any foreigner taking part in the fights of a country through which he may be travelling for scientific and other information, for I feel confident that neutrality is his truest and safest course.

We were invited and pressed to fight by every chief we saw, and by the Arabs also. The king of Karagweh asked us to assist him in killing his own brother; the king of Unyoro made exactly the same request; the king of Uganda wished us to go plundering, and the Egyptian traders would have been delighted to see us join them in their expeditions against the poor people near Gondokoro. If, therefore, Speke had mixed himself up with the quarrels of the inhabitants, the Royal Geographical Society would never have seen him return.

For fifty-two days we were sheltered at Kazeh or 'Toborah by

"Moosah," during which time we occupied ourselves in protracting our route, taking and working out lunar observations, registering the rainfall, shooting, collecting, sending reports and letters to England, attending to the sick and gathering every information regarding the countries to the north, more particularly those around the Source of the Nile.

Speke, upon his previous journey with Captain Burton, had seen that the waters of Unyanyembeli drained to the Lake Tanganika; he had seen that the Victoria Nyanza was 3750 feet above the level of the ocean, but he now knew that Gondokoro, upon the Nile, was but 1500 feet high. His main wish was, therefore, to connect the geography of both or all three regions—the Tanganika, the Victoria Nyanza, and Gondokoro. He wished to trace, from their source, the waters of the Nile which flowed from the highest slopes of Northern Africa. He formed his plans calmly.

Moosah's house at Kazeh was the rendezvous of every traveller and of every needy man. Here we saw people from India, Arabia, Uganda, Usoga, Madagascar, Kilimangao, and other African provinces; and here was the favourite resort of all the gossips in the country. Moosah himself had been for at least twenty years in the country; he was the oldest established trader and certainly the most influential; we therefore, through him, had the freest access to all visitors here, and gained information for our map. We ascertained from them the names and customs of every race that surrounded the Victoria Nyanza, the Tanganika, &c.; and were assured by Moosah that we should have no difficulty in getting hence to Egypt by descending the Nile, because it flowed from the great lake to the north.

But, to make such a journey a sure success, Speke devised that Moosah should accompany us as far as Karagweh, or even to Uganda. He knew that Moosah's fame as a trustworthy honest man would influence the kings of those two countries, and that some of his followers being from Uganda and Usoga, we should be following the direct route by having such guides.

Moosah himself was anxious to get away from Kazeh, as the Arabs, by constant war, had brought dearth, famine, and desolation on the country; he constantly had to supply their demands for powder, for which they owed him heavy sums. However, it was not fated that he should accompany us.

His health had been impaired by opium eating, and was further affected by his having kept the fast of "Ramzan." A supply of opium was upon its way from the coast, and he felt anxious for its arrival, as, if it was plundered, he thought he could not live. Week after week passed, and poor Moosah's drug never arrived; the small stock he had was lessened by

daily applications from his son and others whom he could never refuse, though he gave with a grudge; and so the time came for us to leave.

Meanwhile poor old "Snaay" and five other Arabs had been killed in action, and the remnant of them went to Moossah and told him that he should leave Kazeh at his peril; he must wait to defend it against attack. Under such circumstances, where no settled government exists, Moossah had to submit and had to take an oath of allegiance; but even when we left he still clung to the hope of joining us. However, his death soon followed. We had not left many days when his messengers conveyed to us the sad intelligence that Moossah had breathed his last.

This we regarded as a calamity to our expedition. Our prospects looked dark, two great men, our supporters and introducers to African chiefs, had been cut off within a few weeks of each other. One, "Snaay," had died in an inglorious manner in an inglorious cause, desolating the country, and "Moossah" fell a victim to his own indulgences; but he left a name for gentleness and kindness of nature that will long be remembered. It may show the reader his worth and the importance attached to the event of his death, that couriers were dispatched to the kings of Karagweh and Uganda by his son to announce the decease. The messengers had separate instructions for these kings regarding our intended visit to them, so that the main object of our journey was never lost sight of by Speke.

The route we took from Kazeh to Khartoom may be divided into five regions, which will be separately described under these heads:—

- I. From Kazeh to Kitare, in Usui.
- II. From Kitare to the River Kitangule.
- III. From Kitangule to Uganda.
- IV. From Uganda to Gondokoro.
- V. From Gondokoro to Khartoom.

I.—FROM KAZEH TO KITARE, IN USUI.

Distance 200 miles; elevation from 3180 to 4204 feet* above

* We started from England with six tested boiling-thermometers and two boiling-apparatus. All were tested at Zanzibar, and two thermometers selected and used upon the route—Speke boiling one simultaneously with my boiling the other. They did not give the same results with regularity; and I am inclined to think that when the heights are taken with the mountain barometer, or other more accurate instrument, our present results will be rather below than above the actual height. We cannot say whether five hundred, or even one thousand, feet may have to be added to the altitudes in this paper, as the two instruments used were broken at Gondokoro, and could not therefore be tested as to their error on our return to England.—J. A. G.

the level of the sea; mean of the temperatures taken between 1 and 4 p.m., from the 24th December, 1860, till the 15th November, 1861, 80°. Highest temperature observed, 24th October, 1861, 90°. Extreme cold observed 13th November, 1861, 55°. The rainfalls of January, February, and March were not measured, but I should say that the annual quantity of this district is under 34 inches. The expedition remained here from the 24th of January till the 15th of November, 1861.

This country is close to the watershed which separates the waters of the Tanganika Lake from the Victoria Nyanza Lake. In fact, we occasionally were upon heights which shed their waters north and south, and although in this tract we traversed 200 miles, none of the waters flowed northwards, but all to the Tanganika Lake; yet the streams were so small—in many cases mere springs or sources—it was conclusive that we were upon the watershed of the Equator, upon the north-eastern edge of the vast elevated area which sheds its waters to the Lake Tanganika, and upon the most southern slopes of Nile-land.

This journey was made in thirty-two stages, and during the whole of it we never lost sight of hills which, when not in confused masses of igneous rock, were in ranges or ridges pointing in a N.N.W. direction, averaging in height 3500 to 4000 feet, with villages, cultivations or forest in the valleys between the ridges. Many of the surface rocks were extraordinary, either cropping up in boulders the height and size of houses, or showing strange rock basins, where water lodged, and flat masses upon which the people cleaned their grain.

The last six stages of this district had a different geological formation. The rock was in stratifications of sandstone of various degrees of hardness, colour, and inclination, laid open to view by narrow valleys running northwards, and escarped sandstone rock upon their western sides. Since leaving Zanzibar, we had not met with so good an illustration of the geology of Africa, and it was an interesting part of our journey.

With this change of the rock, we had pure, refreshing, and clear water, very different to the insipid brackish water we had drunk since leaving the coast.

The deepest stream crossed was the Gombe, flowing, at the point we crossed it, to the north-west. It was in flood upon the 21st March, 5 feet deep and 20 yards in width, with little or no current, and flat banks. On the day we crossed it we noted one of those curious phenomena in nature—a quicksand, the only one we observed in our whole journey, yet so common in the rivers of India, and seen also at Simon's Bay, Cape of Good Hope. The altitude at this point was 3400 feet above the level of the sea, and this of itself is a strange coincidence, that a quicksand should be found at so high a level; but all this country is

saturated with water and sand, and it may be that the vast basin of the Victoria Nyanza—not so far away—may have something to do with this, as it rests about the same level above the sea.

The soil varied from sand to rich tenacious alluvial; occasionally red clay was met with, and the whole tract of low hills, rock masses, plateaus and valleys, was lightly covered with brushwood, forest, grass and crops.

Not a day passed while marching that we did not meet with villages, in which we generally encamped. The larger ones were strongly fenced against sudden attack by double stockades, made from trees carried from the forests, and had a hedge of euphorbia outside of this fence. The outer circle of all was a deep ditch. With this defence a village cannot forcibly be entered by any human being, and would stand an assault by bows and arrows as long as water and food lasted.

The huts have steep roofs of grass, are circular, and each set belonging to a family is stockaded from its neighbouring set. Within the enclosures, and sometimes within the huts, cattle and goats are kept, so that cleanliness is not the rule, although in this respect there are certain restrictions, such as that no workers in iron, and no animal deemed unclean, may enter the village.

The "chief" is supreme in his district; he expects, and often demands, tribute from all passing through his country, and if he does not get it he sends a flying column of men, armed with spears, bows and arrows, to try and enforce submission. His principal nourishment is a coarse drink, made by fermenting and boiling the grain of the country; and, though seldom drunk, he is generally in a muddled state.

He has as many wives as he can maintain, and as many slaves as he can buy or kidnap; but if they do not misbehave he treats them kindly. He has a natural religion, the instinct of right and wrong; he has no idols, and believes in a supreme spirit of good and evil being able to avert danger from himself, or to punish others. Although he holds courts, which are conducted with considerable ceremony and earnest argument, he can neither read, write, nor count time.

His dress is a sheet of blue cotton check, or chintz, tied round his waist and falling below the knee. Another sheet of similar material is thrown over his shoulders. The head, feet, hands, and shoulders are bare, except a shell-pendant as the mark of rank round his neck, iron rings on his ankles, and a stick or spear in the hand, completes the "Mteme," or Sultan.

The men of this province lead much the same kind of life as their Sultan, but necessity makes them industrious and active. They prepare the ground for seed with iron hoes, not knowing

the use of the plough or the bullock in agriculture. With the assistance of their women they cut the crops and clean them. They convey all the firewood in from the forest, attend the cattle, milk the cows, defend the property of their Sultan, and a few of them trade in salt, sweet potatoes, ground-nuts, grain, ivory, iron, slaves, taking such to the northern kingdoms, as well as to the coast opposite Zanzibar. They carry loads of 60 and even 70 pounds weight when employed as porters, but have an objection to carry cases of tin or wood, which hurt their naked skins. All articles made up for transport by native carriage in Central Africa, should undoubtedly be placed in waterproof sacks and not in cases.

The women are better dressed than the men : all of them wear a cotton cloth from the waist to above the ankles, while the majority of the men have the skin of a goat slung from one of their shoulders as their only covering. The women have their meals separate from the men, as M. Du Chaillu mentions in his Apingi Kingdom. They eat in the open air, with their children seated by them ; in their household duties they are clean and tidy. The women slaves are the first to rise in the early morning and they work all day, grinding corn with a stone upon a slab. Their other employments are to clip the heads of corn in the fields, and to carry the produce on their heads in bark baskets to the village. They cook the meals of their husbands and prepare the native beer. Sometimes they will accompany a caravan to the coast, carrying their infants with them, and will occasionally engage themselves as porters. In height they are shorter than the men, differing in this respect in the same way as we do. The height of the men is perhaps two inches below the average of Englishmen.

Slavery is the curse of the country, and the African races will continue this practice of buying, plundering, and selling slaves to traders as long as the Zanzibar Government, the Portuguese, the Egyptians, and the Chinese support it or connive at it. When travelling in Africa, we saw that no one of any *social* position, and who was at all ambitious, could enjoy life without slaves. Purchasers generally obtain them from tribes different from their own, and give the highest prices for natives of Usoga and Uganda, considering them more faithful and attached than the slaves of races contiguous to themselves. It was observed that the master and mistress of Central Africa treat their slaves with kindness, looking upon them as part of their property, which they feel bound to care for ; and in gratitude for this the slave generally becomes attached to his foreign home.

The condition of slaves becomes very different when they fall into the hands of a dealer, an Arab or other trader, who takes

them from market to market in gangs tied together by the neck, with heavy chains—a brutal precaution which never entered our heads to adopt—and finally, when no sale can be effected, he conveys them to the coast, where, at great risk of capture by our men-of-war, he ships them on board a native craft, never again to see their old homes. This is the most cruel period in the life of a slave, this forced transportation, accompanied by extreme privations. It would be a relief to hear that the demand for them was summarily stopped at the ports of embarkation; for *then* these slave-dealers and natives of the interior would, of necessity, cease to take them to the coast.

The Mahomedan Government of Egypt is, I regret to say, extending its influence in those parts by large acquisitions of territory; and it becomes its duty to control the desire of its subjects to make themselves masters of the slaves of Abyssinia and Central Africa. Annexation by this Power would be a serious evil; and, for the sake of the fine independent races of Uganda and Kuruagweh and their fertile country, I hope and trust that civilisation may be introduced among them by Christians, not by Mahomedan races, who would turn the whole country into a market for slaves. The trade of the east coast of Africa is being developed more rapidly now since the opening of the Suez Canal, but the interior should be penetrated to obtain its rich products, and foreign traders should push on from the east coast to Egypt, protecting the people from Mahomedanism, forming trading depots at different points, and showing their intolerance of slavery.

TRAVELLING SEASON.

I may conclude my notes upon this district by making the following remarks upon the seasons as taken from a field-book kept daily, and will show the favourable times of the year for travelling. Natives are often obliged to travel at all seasons, but will not readily do so at the desire of a master; they prefer to travel during certain months, such as March and April, when the crops and wild fruits are about to ripen, and when they can help themselves as they pass the fields or go through the forest; or they prefer to start in August, after their crops have been gathered and they have had a feast on the new grain. At this time of the year they begin to burn down the tall grass, which might conceal wild animals. The seasons they naturally object to travel in are when the country is parched by heat in June and July, or flooded by water in December and January: in these times food has to be purchased, as the

harvests have been gathered, and travellers suffer in health from hunger, heat, cold and rain.

January, 1861.—Rain falls in this and the three preceding months, softening the soil and preparing it to receive the seed; acacias and ground-nut are in blossom; new grass and young rice are above ground, and a few fruits are forming. Black storms from N.N.E., with thunder and lightning. Wind N.E. and N.N.E. Average temperature during the month, taken between the hours of 1 and 4 o'clock, 76°.

February.—Rain continues to fall this month. The wind is almost cold; the grass and young crops are a good height, and seeds are ripening. Wind W. and S.W. Temp. 76°.

March.—This I call the beginning of summer, and it may be called a dry month, though showers fell upon the 22nd and 23rd, the time of the vernal equinox. The paths and much of the country are still covered with water, the accumulation of rain during the past three months. Blossom is plentiful, the grass is high, and Indian corn, in a few places, is ripe. The S.E. wind blows daily, bringing with it fits of sneezing, similar to what we have in England during hay fever in May. The air is impregnated with dry, imperceptible dust. The wind occasionally blows from the E.N.E. quarter. Max. temp. 80°, min. 62°.

April.—This month (on the 3rd) was the commencement of the rice-cutting at Mininga. There are few days of rain. The morning breeze is still from the unhealthy south-east quarter, and many suffer from fever. Temp. 80°.

May.—The harvest is general during this month, and grain is abundant. No mention in my journal of any rain in May. Average temp., at 2 P.M., 83°.

June.—I call this the first of the autumnal months, because the harvest has all been gathered and housed. The poorer classes are allowed to collect what they can of grain and sweet potato off the fields where the harvest has been gathered. At sunrise the mornings are piercingly cold; a haze obscures the outlines of the hills; the sun rises in a haze, which does not clear off till 9 or 10 A.M.; and even during the day a film of haze hangs about the fields. The wind blows with regularity from the S.S.E. and S.E., making us sneeze and giving us hard coughs and colds. At night the sky, for forty degrees of altitude, is misty, and the strongest wind that blows is from the south-east. By the end of this month all deciduous trees have thrown off their leaves, and nothing but evergreens refreshes the eye. On the 1st of June, at 2 P.M., the temp. was 75°.

July.—The fields are bare and dusty; the men employ themselves with long-handled rackets in threshing the corn and winnowing it in the southern breeze. They gather the honey of

the season (this month corresponds with our September), attend the young calves, and burn down the grass to allow fresh to spring up. The mornings are close, and feel like rain; the atmosphere is still thick, the days are gloomy; heavy clouds appear in the north, and a plump of rain falls upon the tenth. The unhealthy south-east breeze still continues, but it is not so constant now. At 7.50 p.m. of the 7th I observed a comet near Ursa Major. On the 9th its position was more distant from the north; the tail pointed away from the constellation, and was about the angle of 45° .

August.—This is a gloomy month, the atmosphere is thick and the mornings close. The people make beer daily from their stored grain, and drink it off when it is fresh. Arab traders now march for the northern kingdoms, and native dealers travel about selling and bartering slaves, salt, ground-nuts, &c. Little or no rain falls.

September.—The first month of the Central African winter, for the aspect of the country is grey and wintry. The days are beautifully bright and clear. By the 12th, the unhealthy south-east wind had gone to easterly, the streams had become mere chains of ponds, with dormant vegetation, and about the Equinoctial time on the 24th, we had merry peals of thunder, with lightning and a northerly breeze; two days later, heavy rain followed the storm.

October.—The mornings are cold, the days oppressive, but sickness is less, and it is a favourable time for marching to the coast. We met several caravans; there were pleasant showers and thunder-storms, all the more acceptable, for the water-courses were dry and drinking-water was scarce. At Usui the ground is broken up for seed. The wild grass is either withered or has been burnt down, and certain trees begin to drop their foliage. The only vegetation is such as grows all the year round, namely, sweet potato, plantain and manioc. Average temp., between 1 and 4 p.m., 84° .

November.—Rain came with the new moon upon the 2nd, with occasional storms and high winds. It continued during the month, falling almost every day with a N.N.E. and N.E. wind, and most frequent in the afternoons. Caravans for the coast travel this month. The ground is prepared for receiving the seed. Indian corn and manioc is ripening. Winds variable; those from the S.E., E., E.N.E. and even N.N.W., are recorded. $1\frac{1}{2}$ inch of rain fell in 15 days during the whole month. Max. temp. 79° ; min. temp. 58° .

December.—The rain of the last month has brought up the brier, and a few blossoms are observed: but no record of this month can be offered, as we were in the neighbouring province

of Karagweh, where the rain-gauge marked 2·80 inches for the whole month. This fell upon fourteen different days, and the greatest record in 24 hours was on the 29th December, between 11 A.M. and 5 P.M., when 1·16 inches fell. The temperature during this month at places between Ugogo and Kazeh (altitude 3200 to 4000 feet) averaged 84°, between 1 and 4 P.M.

ABSTRACT OF THE ABOVE REMARKS.

Driest months—March, April, and May.

Partial rain in June, July, August, and September.

Heavy rain in October, November, December, January, and February.

II.—DISTRICT FROM KITARE TO THE RIVER KITANGULE.

We have now entered upon the northern slope of Equatorial Africa; every drop of water in this district flows to the Nile. The distance along it is 120 miles, travelled by us in fourteen stages, across ridges of sandstone, averaging 4000 feet above sea-level; pointing, though not with regularity, to the north-east. The valleys are 200 to 800 feet lower than the highest stratifications of rock, and are of various forms. Some are narrow passes, with brushwood and cultivation; others are broad expanses of grass, rush, and bog, where giraffe, rhinoceros, hartebeest, cranes, and geese are very frequently seen, and which at no very distant period were great lakes; or the valleys are deep depressions, reservoirs of water 3 to 10 miles in length, frequented by hippopotamus, otters, water-bok, and full of fish.

To the west of these ridges, and upon the upper strata, at the second stage, the country has been upheaved into a series of volcanic mounds, which are shaped like saddle-backs and cones. Here the hill-sides and paths are strewn with sharp fractured sandstone and fragments of quartz.

The more common hill or mountain of Karagweh has a round outline with steep sides, and is covered with a coarse description of grass 3 feet high, which gives to all of them a bleak look. The only other vegetation consists of a few shrubby trees, which grow in the courses of the ravines down the sides of the mountains.

There were no rivers crossed in this route, but merely rivulets and bogs; the hills are so steep, no streams accumulate to any size. This was the highest portion of our whole route; it was also the highest inhabited part, for Rumanika, the proprietor, resides all the year round at an elevation of 4661 feet, and from our encampment at this altitude, looking to the west, we could count four ranges, one receding from the other, and

pointing northwards. These ranges are of uniform height, and part with their lakes and streams to the valley of the River Kitangule. Far beyond these ranges, at a distance calculated at 50 miles, we took the bearing (c.B. 295°) of a volcanic cluster of three sugar-loaf mountains in Ruanda. This was a very interesting sight, causing our intense admiration on account of their towering height—say 10,000 feet; but on account of the foggy atmosphere, we could only see them occasionally, while the sun set behind them. The natives said of them—for we could not go so great a distance off our route to visit them—that they were so steep that no one could ascend them except on his hands and feet.

The cultivations of Karagweh are not confined to the valleys or lower ground; but upon the western slopes of the hills, where there are no escarpments or fragments of rock to spoil the crops, beans, English peas, sweet potato, ground-nuts, and pulses, are grown in sufficient quantity to support the inhabitants; and groves of plantain are abundant.

Karagweh, being at the south-west corner of the Victoria Nyanza Lake and the high road to the ivory-producing countries of Koreh, Uhia, Kittareh, Unyoro, and Uganda, is the only route taken by traders and travellers from the sea-coast to these northern kingdoms. It has, therefore, become a mart of great convenience for the meeting of inland and coast traders. Here ivory is bartered for beads, salt, iron, copper, cloth, and slaves. The Zanzibar merchants have depots here, detaching parties to the west and north for the purchase of ivory and slaves. This trade is sanctioned by the Sultan Rumanika, who is a kind, amiable man; the least extortionate of all the chiefs we met, consequently his capital has become a far more important market than that of Kazeh, where there is no proper government. The only drawback to Karagweh is the difficulty of getting through the excessively extortionate chiefs residing between it and the coast, and there is no avoiding the heavy taxes these chiefs demand from caravans moving either from or to the coast. The resources of Karagweh are not yet developed on this account; but as long as Rumanika lives, and while the traders behave justly, the country will continue to compete successfully with the other markets for ivory in Africa. It would be of great advantage to the east coast traders if they thoroughly established their credit in this part of Africa, for unless they do so, the Egyptians from the north will descend with their hordes and sweep this trade down the Nile.

The tribes who arrive with ivory, coffee, slaves, &c., are numerous, and give constant opportunities at such a rendezvous as Karagweh of obtaining information regarding their nations.

Captain Speke took advantage of their presence to glean for his map, and hear all about this lake-country. He heard here, from some men of the Sultan's, who had just returned from a journey to the north, that one hundred foreigners, in ships from Egypt, had been attacked by the Wagani, who plundered them of clothes such as we wore, and beautiful rare Venetian beads. This was intensely exciting news to us, for we knew they must be a party who had ascended the Nile; but how were we ever to reach them? It was also added, that their guns were so large that they knocked trees down; and their ships were so commodious that they carried white sails made of cloth, and had animals on board of them. Nothing could be more conclusive to us, and Rumanika showed us some beads which were entirely different in size and colour from those used upon the trade-line of the east coast. We therefore pressed the Sultan daily to allow us to proceed on our route.

Besides getting the above welcome news, we had the advantage of constant intercourse with those who lived here all their lives. The Sultan and his late father, Dagara, and his family, had settled here, for three generations or more; and though they, individually, had never travelled beyond their own kingdom, they knew by tradition, and from their own servants and slaves, every country and lake within 100 to 200 miles of them. They gave us freely all the information they possessed; pointing to the countries they spoke of, such as the southern ends of the Luta Nzige and Victoria Nyanza Lakes, and mentioned their distances in days' journeys. The Sultan stated that a canoe could sail all the way with the exception of two miles of obstruction in the Kitangule River, from Uganda to Karagweh Lake. The family were intelligent and well-informed, we therefore were disposed to place reliance on what they told us. Neither were they superstitious about our making astronomical observations; but I attribute this friendship very much to our having been the guests of so well-known and trusty a man as the late Moossah of Kazeh. When we left we parted as good friends as when we arrived, and this is sometimes difficult to do in Central Africa.

Here, and in every other territory we passed through, have I seen Speke, compass in hand, with native travellers around him, getting from them the positions of Uganda, Unyoro, Ujiji, Ukereweh, Luta Nzige, Victoria Nyanza, Usoga, Ugani, or places we had never seen, and hearing from them the descriptions of the races around the lake. In fact, we never met a traveller of any intelligence who was not put through the points of the compass in this way; but none of those who lived on the western shore of the lake could ever tell us who lived

upon the opposite shore. As we changed ground from camp to camp, going northwards, Speke, by following this system of observation and native interrogation, was able to secure cross-bearings of all the countries which appear in his map. And as far as we inspected afterwards, these cross-bearings were wonderfully near the truth; for this reason I predict that what we were unable to prove by inspection will be found equally accurate. In one instance, this is already confirmed. Speke laid down the Luta Nzige Lake entirely from native information: it was afterwards visited by Sir Samuel Baker, and its northern extremity had not to be altered from Speke's map; and the southern end has yet to be visited before it can be shown that Speke accepted wrong bearings. This case I instance to prove that when information is properly sifted and obtained from natives of the upper and intelligent class, it is decidedly reliable.

The countries which extend along the south and west of the Victoria Nyanza had their representatives constantly at Karagweh, and it was of great interest to us to talk with them. A trader of Mombas, named "Jooma," the agent of a house in Zanzibar, and speaking a little Hindostanee, was, perhaps, as well informed as any of the natives. He had traded for ten years in different parts of Equatorial Africa, had seen Kilimangao, Ukereweh, Koreh, Ujiji, Uganda, and knew the routes to these places by heart. While on his way to Chaga, near Kilimangao, he had met Captains Burton and Speke at Ugogi, and delivered some letters to them. He described the changes of colour in this mountain, but not knowing what a snow-capped mountain meant, he did not understand that snow could produce this difference of appearance in tint—white, black, green, brown, and scarlet successively, if viewed between the times of daybreak and darkness. He believed that all this was supernatural, for he became ill when he wished to ascend it, and said every black man was affected in the same way by it; though white men, if like Speke, might not be so. He understood the mountain to be full of treasures in gold and other minerals, and he picked up some stones at its base which were the colour of some red cornelian links which I wore; but no Arab would dare to dig this mountain, for he would certainly be struck by some malady. Poor "Jooma" was full of superstitions.

As this route will have to be explored when the eastern shore of the Victoria Nyanza is determined, I may mention here the experience of Jooma when marching between Ugogi and Chaga, near Kilimangao. He had a wholesome dread of the Masai people, who, having no chief Sultan, are split up into

small states, each one demanding of the traveller cruelly large taxes; and this fact is the barrier to successful exploration in this portion of Africa. Though Jooma had sixty-four guns with him, even this number did not keep off the troops of natives, who attacked him. But, at last, terms were made, Jooma got away; and he never could be induced to go there again. I mention this to show the difficulties of this route, and that it would be more advisable to explore the eastern shores of the Victoria Nyanza by boats from its southern shore than to attempt a passage through the Masai to the eastern shore of the lake. Two of our followers had gone from Zanzibar, *via* Kilimangao,* to within three days' journey of Usoga, where they had heard of large boats capable of holding 60 men; and had also heard of men on horseback, probably those races to the south of Abyssinia; and had seen a salt lake, called by them Leebassa, probably the Naivasha of Wakefield.

Jooma states that the Masai race are savages compared with the people living at the south extremity of the Victoria Nyanza, which he visited in 1852 with 21 followers. He arrived at Muanza, the point where Speke first discovered this lake in 1858, and from it he could see the island of Ukereweh indistinctly. He obtained a boat and 24 paddlers, which landed him on the island of Wæzee in five hours. This island is peopled, and contains cattle. He was sheltered, and got some fish. He paddled the whole of the next day till sunset, when, arriving at the island of Ukereweh, he was hospitably received by the Sultan Machoonda, who still lived in 1862. This Sultan seems to have been a thorough prince, for he entertained Jooma for three months, giving him a present of 25 cows, two goats, &c. Jooma says the prices of all articles in those days were more moderate than now; for instance, he purchased 20 fish for one string of beads, a goat for four strings, and a cow for ten. Small tusks of elephants were to be met with. And on my venturing to doubt that Ukereweh was an island, he indignantly replied that it was a very large one; and denied the possibility of its being the mainland, for "how could the lake fall to permit of Ukereweh being the mainland, it neither rises nor falls here? Did I not reside on the island for three months?"

When sailing from Ukereweh to the mouth of the river Kitangule he had been attacked, and was driven for shelter on the island of Kisseewah, under Lohangarazee, at the mouth

* I prefer Jooma's way of pronouncing "Kilimangao" to that of other people who call it Kilimanjaro, because the derivation is evidently "the shield mountain," a conical volcanic mass or peak rising above the country, in the same way that the boss or centre part in some shields rises above the shield: Kilima = mountain, N'gao = a shield—the mountain like a shield.

of the Kitangule (I mention this as a link in my proof that the lake extends from Ukereweh to the River Kitangule). But, continued Jooma as he addressed me when at Karagweh, "when the King of Uganda sends his boats for you you should be all safe, and the voyage might take you about two months." There is no doubt that a canoe, going along the shore, as it has no compass and no sails, would take a considerable time upon such a voyage of 120 miles, but even with a native crew, going into and out of all the bays, it ought not to take half this time of two months. This information is copied from my journal written on the spot.

While delayed at Karagweh, I was very much struck by the extreme blackness of skin in a race who came there from the Lake Victoria direction to sell coffee. The blackness of their skins reminded me forcibly of the races dwelling in the swampy regions of the Terai of India, and this to me at once marked their origin as a race living among lakes or swamps. They were Wahia, or Wazeewa, who live on the shore of the Victoria Lake to the south and north of the mouth of the river Kitangule, and are considered an inhospitable, bad race; but we experienced no unkindness from them.

They, the Wahia or Wazeewa, are dark, wiry, sturdy, broad, round-faced negroes, who allow the hair of their faces and of their small beards to grow wild; the woolly hair on their heads stands out in great thatches, which shade their faces. They differ from almost every other race, except the Waganda, in having no teeth-marks, no skin-marks, and no teeth extracted, and they may be considered as the link between the people of Unyamezi and Uganda. The heads of the men are ornamented with a single horn, the curved horn of a sheep, a goat's horn, or that of the waterbok, a new species of water antelope seen by Dr. Kirk in southern lakes, and sent home to the British Museum by Speke, and called after him *Tragelaphus Spekii*. The skin of a cow is their chief dress; this has the hair on, and is friezed on the inside and coloured yellow. The hairy side is worn next the skin, but reversed during rain; it hangs to the middle of the thigh by being tied by a knot at two ends over the right shoulder—the lower corners are rounded off. Besides this handsome skin, the Mohia robes himself with a yellow bark cloth, or one with black zigzag stamps upon crimson ground; so dressed, and smeared with grease, he is one of their upper class.

They carry a single spear of a remarkable pattern, for it differs from all the spears seen in Africa. The staff is $5\frac{1}{2}$ feet long, of a white knotty wood, and not of bamboo, for bamboo is not indigenous to swampy countries, it chooses rather to grow

away from water. The iron blade is a broad oval, or of a heart shape, having a nick or shoulder to it, so that it may remain in an animal. They also wear round their ankles rings of solid iron, polished, and no thicker than the quill of a duck, and a Mohia may occasionally have a massive arinlet of ivory round his arm above the elbow.

Their women are pretty, and are particularly clean in their persons and dress; they were not observed to grease their bodies, but their skins are well washed, and before sitting upon the ground they spread out some leaves so as not to have their cow-skin and bark robes soiled by the earth.

I have been particular in my description of this swamp-living race, as I wish to show that there is a distinct fashion of dress, of caste or clan-marks, and of arm, in every race we met in Africa.

Each nation or race felt a pride in adhering to its own fashion, and no two countries were ever observed to dress, mark, or arm alike. Therefore it was that we became familiar with the aspect of the different races we saw, and could distinguish any stranger, not alone by his face or language, but by his dress, caste-marks, and arms, as soon as he stood before us, just in the way that we recognise a foreigner by his outward appearance.

There was not a race along the western half of the Victoria Nyanza Lake, or between its shores and our route, of which we did not meet distinct types to converse with, and make notes upon their country, their dress, ornaments, arms, habits, &c.; but it might tire the reader to describe them all with minuteness, suffice to say of the fashions in Equatorial Africa, commencing from the south of the Victoria Nyanza and going round the western side of the lake to the north, that we saw the Wanyamezi perfectly happy with the skin of a goat as his sole covering. The Karagweh people tie a neat flap of leather around the loins, shorter in front than behind; the Wahia have been described. The Wakoreh make the blades of their beautiful spears 15 inches long. The Warunda have a flap of leather around their loins of almost indecent shortness. The Waganda dress in salmon-coloured shawls made by sewing together several strips of bark, and in handsome robes, like our skin carriage-rugs, but made of goat skins, antelope skins, &c., and show less of their bodies than any African race I know of; their heads, arms, and feet are alone uncovered, for they so robe themselves that all the rest is concealed; besides this, when crossing rivers, they wear a bandage like the letter T, and carry their smart clothes upon their heads.

The next races upon our route were the Wanyoro, who

expose the chest and back, robing the rest of the body to the knees, or to the ankles, in kilts of bark cloth, skins, &c., but they are a slovenly people. The Wakidi are at once distinguished by their lithe but muscular figures, and the tight iron rings round their necks and arms; the men wear round earrings of brass or iron, and, when they can procure it, they carry the fat of a cow or a goat, for anointing their bodies, in a coil round their necks, so as to have their arms free for their spears and shields. Lastly come the Wagani, who stand perfectly nude before you, but quite unconscious of their nakedness, for they ornament their heads, their ears, lower lips, necks, arms, waists, knees, and ankles with feathers, cowries, beads, and iron, not wearing any leather or cloth coverings. They are when so decorated and painted with red earth and ashes, in zebra-like stripes, the most dashing race we observed, and stand in graceful attitudes unknown to us who clothe ourselves from head to foot. After these races come the Bari people, at Gondokoro, who have a peculiar fashion of head-dress, and are naked; there were other races of Kitch, Shillook, Nouer, &c., who wear skins and a few clothes, till we reach civilization and people clothed from the markets of Europe.

All those races can be recognised by their weapons, by the length of the spear handle and the shape of its blade, as the make and fashion is different in each. Of all the spears seen, the longest and heaviest is that used by the Waganda, and the slightest that of the Watuta—a plundering, rascally, marauding race, with no homes, similar in most respects to, and I believe identical with, the Zulu Kafirs whom we had the opportunity of seeing at Delagoa Bay. Both Watuta and Zulu circumcise, and wear a long appendage to conceal the circumcision; and, in my recollection, we saw no other race who observed this custom, so that they are easily distinguishable. The Watuta were upon our route on several occasions, and we have visited their deserted camps; they are a cowardly race, preying upon the weak and defenceless, and travelling in flowing columns over many parts of the country.

In concluding these notes upon races, the following table will show the reader the difference in the arms and caste-marks of the races we were amongst, and, considering how few in the present day adhere to the arms of their forefathers, it may be of interest to note those still existing in Central Africa. But, before proceeding with them, I may mention what we were told by an intelligent native trader, named Keengo, of two races he met with from the country to the east of Uganda, while on a plundering expedition (which was a failure) with Soona, the former king of Uganda, who wore an armour of

Names of Places.	Guns.	Spears.				Shields.		Bows.	Arrows.	Caste Marks.	Tattoo Marks.
		Head.	Blade.	Butt.	Length of Blade.	Length.	Wood.	Leather.			
Wazaramo . . .	Few flint . .	ft. in. . .	in. . .	in. . .	in. . .	in. . .	None	None	feet. 2 to 3 in quivers.	Similar the bodies with a pinnate of oil and red clay.	Not noted.
Wango	Few flint . .	4 6	..	5 8	67	..	..	Curled and painted	..	Three stripes on each temple, and a perpendicular line on forehead to the nose.	Not noted.
Wanyamal and Wanyambwa.	Very few flint.	0 43	1 5	11 59	..	..	..	Oval hide . . .	3 to 3 not feathered.	..	Upper incisors filed, lower incisors extracted, this makes the men limp.
Waleta	None	0 44}	1 2	94 56	..	..	..	..	..	Tattoo on foreheads and noses; circumstances.	One or two lower incisors cut.
Wauil	None	Wood, not Bamboo.	..	..	..	70	None	None	3 to 3	Double serpent like tattoo marks on chests and arms.	..
Wanyambo and Kariyach.	None	Not Bam-boo	4	..	..	70	None	None	34 feathered.	A few blistered tattoo marks on the trunk.	..
Wakereh . . .	None	0 43	11 5	21 71	..	76	None seen . .	None seen . .	Saw none.	No caste marks seen	No teeth marks or extractions seen.
Walia	None	0 61	.. 5	10 76	..	..	None seen . .	None seen . .	Saw none.	..	..
Waganda . . .	None	{ 0 19 } { 0 49 }	3 {	12 23 5 25	..	83	{ Pith wood, circular and kite shaped, having a bow, rim 24 feet diameter.	..	None	No caste marks . .	No teeth extracted.
Wanyoro . . .	None	0 51	21 4	11 72	..	..	Kite shaped . .	..	None	Cattlehide marks, but no regular caste marks.	Lower incisors and eye teeth extracted.
Waramb. Mal. Chereh.	None	Bamboo 0 74	.. 6	16 96	..	..	Pith, lozenge shape	Cow hide, oblong.	None	Paint their bodies red and ash colour.	People in the Unga direction are said to wear an iron armour and carry iron shields.
Wakali	None . . . .	..	..	..	..	73	..	A square oblong stretched on a stick.	None . . . .	..	Use a sling and stone and wear sandals.
Wamra (from barway).	None	None . . . .	..	..	..	..	..	Buffalo hide . .	None	No information . .	..
Sullock	None	Wood not Bam-boo 0 64	3 0	23 91	..	..	..	A long oval, 4 feet long, of rhinoceros or hippopotamus, with stick along it.	None . . . .	..	..
Bagara Arala .	Few or none .	Wood . 4 to 5	..	25 100}	..	..	..	..	None	Their hair is platted down the back to a cue or to several cues.	..

• Wateta spear blade is a rod of iron flattened at tip into diamond shape.

† This short spear, seen in Uganda, is the Unga spear, which is better fitted for digging potatoes than for anything else.

‡ Carry a spear sometimes.

§ They ride with this spear after elephants.

iron over their faces and loins, and carried iron shields. They were very brave, and equal to eight times their number of Waganda. The same traveller also told us that a troublesome race called the Wamara, living in the Masai direction, at the north-east corner of the Victoria Lake, use a sling and stone, and a shield made of buffalo hide, never using a spear, and that they wore sandals. We met with no example of either of these races, nor of any race living upon the east of the Victoria Nyanza, which proves the great extent of the lake in this direction.

Before concluding this district, a few notes may be made upon the seasons, but we were not able to do much from the fact of having been laid up with sickness from the 15th of November till the 20th of April:—

November.—During this month, plantain, sweet potato, ground-nuts, Indian corn, beans of a small description, and pulses, are obtainable at Karagweh, and the hills are covered with grass, but not of a good description for grazing. We had rain on fourteen days of this month; it began with the new moon on the 2nd, but the total fall amounted only from one to two inches; max. temp. 76° , min. 58° ; wind north-east.

December.—Rain fell on fourteen days of this month; amount, 2.7 inches, 1.16 inches falling on the 29th, between 11 A.M. and 5 P.M.; max. temp. 71° , min. 57° ; wind north-east.

January.—Rain fell on fourteen days of this month also, amounting to 3.3 inches, the greatest fall in one day being .83 inch on the afternoon of the 10th; max. temp. 71.7° , min. 59° ; wind north-east.

February (from Speke, Appendix F).—Rain fell twelve days of this month; amount, 3.6 inches.

March.—Rain fell eleven days of this month; amount, 3.9 inches. Plants were in flower and fruit during the months we were in this district, namely from November till middle of April.

April.—I was informed by the brother of the king of Karagweh that the greatest fall of rain during the year takes place here between the 15th of April and the 15th of May, lasting for thirty days during the month of Ramzan, and I see this confirmed in Speke's Appendix, for 8 inches are recorded for this month.

III.—FROM KITANGULE RIVER TO UGANDA CAPITAL.

Hitherto the characteristic features in our route from Kazeh had been uplands, steep sloped hills, deep narrow valleys, with insignificant streams easily waded—a country, in fact, without

a single engineering difficulty; whereas now we enter upon a region abounding in deep streams, with two navigable rivers which would require extensive bridging before there could be thorough communication.

We made the distance of 145 miles in 24 stages, but, on account of the winding nature of the route, to avoid swamps and swollen streams, 50 miles might be added as the more correct distance travelled.

The country is the western shore or side of the Victoria Nyanza, and is perfectly different in physical configuration to anything we had yet seen upon the journey. It has no doubt been a plateau of 4000 feet high, as the uniform level and the level tops of the existing hills are a distinct evidence of this. These hills, or remnants of an original plateau, are often solitary, and consist of masses of stiff clay and boulders hitherto impervious to the action of the constant moisture at the Equator. The softer parts of the original plateau have been washed away to a depth of 300 to 400 feet, at intervals averaging a mile apart; consequently to walk across this is to go through a bog; ascend 300 feet, keep level, descend again to another bog, and so on during the whole march.

The vegetation of these parts is very distinct and interesting. A thick reed, 10 feet high, covers the flat tops of the hills, a few trees grow upon their sides, below the trees are the huts of the people, sheltered by dense masses of plantain trees, and, lowest of all, a tropical vegetation of trees, creepers, and papyrus, hide the vile swamp of tenacious mud in the channel between the different ridges of hill.

When standing on these heights to view the country round, the breeze is cool and refreshing after crossing the mosquito-filled swamps beneath, and as the eye is stretched from the feet to the horizon, in succession you look over trees into valleys of various forms, often square, and many pointing to the lake, but filled so full of vegetation that their exit cannot be seen. Beyond the valley rises another hill similar to what you stand upon, and beyond it is the horizon, without a peak or mountain in the sky-line.

The River Kitangulo is the first important stream to be described. Several natives of Karagweh told us that the people of Urundi were in the habit of floating timber down this river, and they concluded that its waters must come from the head of the Tanganika Lake, but we were able to show them the fallacy of such reasoning by the difference of altitudes of the two positions, and by the barrier of the Mount M'foombiro range. It probably has its rise in this mountain, but we saw it fed by four lakes in Karagweh, which radiate to it.

The Kitangule, at the point we ferried it, runs through a plain which is 20 feet to 40 feet above its level. The view, looking up stream, shows a high steep left bank and a hilly wooded horizon, with a shelving right bank covered with papyrus. It is a majestic stream, 5 to 6 fathoms deep, 80 yards or so across, and fringed with papyrus for a considerable width, with a current of 3 to 4 miles per hour. From one dry bank to the opposite one is 250 yards across, and no foundation for a bridge could conveniently be got nearer than this, the intervening space being white shingle, rushes, papyrus and the river.

The canoe which took us across was a single timber the width of an ordinary easy-chair, and 15 yards in length, hollowed out. It carried my party of fifteen Waganda, their dogs, and their large shields, with ease. At starting, on account of the strong current, we had to pole up stream, by the edge of papyrus, for 30 yards, the paddles were then plied rapidly to enable us to hit off the exact landing by slanting down with the current. I had a sounding-line all ready, and commenced to use it, but neither the head ferryman nor the Waganda officer in charge would permit me to make any use of it, even though I offered handsome presents; they said something would certainly happen to the boat if I sounded, and the king of Uganda would take their lives if anything happened to me. Speke, who had travelled this route a few months before me, found the same objections made.

His course was somewhat different from mine when proceeding hence to Uganda capital, and he saw the Victoria Lake at points where I did not. His first view of it was from Mashonde, and afterwards he constantly came upon it, as shown at the end of this paper under "Extracts from Speke's Work."

It was always intended that boats should be sent from Uganda to convey me from the Kitangule to Uganda, but, after being a settled question, the plan fell through—no boats could be found. Those we saw were unfit for such a voyage, and the risk to life and property would have been great, but this might not have stood in the way had there been no other obstacle. I had been assured by Rumanika of Karagweh, and others, that boats would certainly be sent for me by M'tessa, but the representatives of both kings took such precious charge of me, and especially of themselves, that they would not attempt the voyage. There was no overruling them, and my disappointment was more than I can describe.

It may be mentioned here that so late as the year before last, in 1871, M'tessa, king of Uganda, sent a party of his

soldiers all the way to Zanzibar with presents for its Sultan, begging, amongst other things, that men might be sent him who were capable of building ships, by which he could make excursions on the Victoria Nyanza. His father was in the habit of making such voyages, but was seldom successful; but, if M'tessa was supplied with the means, I think he would gladly assist any traveller in the exploration of the lake and the countries on its eastern shores.

The first indication of the presence of the lake that my party had was two days after we had ferried the River Kitangule, when, to the north-east there was a plain extending to the mouth of this river. I took the bearings of all the higher ground; but, from north to east—in the lake direction—all was a dead flat to the horizon, there was nothing to take a bearing upon, and the course of the Kitangule, through this plain, was marked by a winding foliage of green. The bearings then taken are as follows, no compass variation has been applied:—

Compass Bearings from N'gambezi.

Blue hills of Ukoreh	..	305	..	Kizzeewah	..	..	175
Lohengceerah	..	275	..	Issesseh (Meero)	..	..	117
M'Gandoo	..	217	..	Uganda	..	..	40
Unyoro 11°.							

At Bhammeera, the first march to the south of the Kitangule, the following bearings were given me:—

Uganda and Nyanza	..	41	..	Kufro	..	..	242
Keebee	..	131	..	Kawangoo	..	..	275
Usoga	..	66	..	Oosagara	..	..	332
Unyoro	..	11	..	Uhia	..	..	182

At the camp of Loochamoo, a distance of twelve miles from the lake, I had a bearing of it nearly due east of where I stood. Here the general term "Looeroo," used in Krageh, Uganda, and Unyoro, as well as "Nyanza," is given to it, as well as to the Lutanze Lake.

Compass Bearings from Loochamoo.

Looeroo (the lake)	..	86	..	Cheyseembee	..	..	212
Uganda	..	48	..	Rogerahs	..	..	235
Unyoro	..	9	..	Kizzeewah	..	..	say 120
Koreh	..	313	..	Keewaleh block (right of)	..	..	185

In making this march of 14 miles to Loochamoo, the country was flat and the grass ankle-deep in water, the mosquitoes were in myriads, and bit desperately at night, even through a light blanket. In such a country any view of the lake was impossible;

and where villages existed they were surrounded by groves of plantain, obstructing all vision. One ridge of hills, at a distance to our left, came down in a north-west direction.

Upon the 9th of May, having been travelling for four days through bogs, across a low country, and with streams—3 to 5 feet deep—at intervals of 3 and 4 miles, I was glad to reach the high ground of Chango, whence, at an elevation of 500 feet above the lake, I had a clear view of three-fourths of the horizon. This view included the Victoria Nyanza, which gave a sea horizon from 85° to 152° , and was calculated to be 10 miles away. I took a sketch of the lake, and entered all the bearings around me as given by a Waganda, and here they are, without compass variation:—

Compass Bearings from Chango.

Keewootummoo (low ground next the lake)	..	..	..	157
M'werooka (also low ground)	..	..	..	175
M'werooka Bay	..	..	..	126
Uninhabited island (say twenty miles off)	..	..	..	118
Right of Sesseli Island	ditto	..	..	111
Left of Sesseli (as far as was visible)	..	..	..	75
Uganda (hills)	..	..	..	60
Unyoro, ditto	..	..	..	17
Usagara	{	hilly horizons	..	218
Kawangoo			..	246
Karagweh district (broken horizon of hills)	..	..	..	214
Tenzeewah's (right of block) or Keewaleh, of 29th April	{			188
Mohia (low swelling hills)	..	..	..	173
Woozoongora (low ground)	..	..	..

Chango, where these bearings were taken, is one of the prettiest and best kept spots seen upon the journey. Here the natives call the lake "Nurrowareh," and that part of it at the river Katonga they called "Looero." They knew the Lutanzige to be in Unyoro, and gave me a bearing upon it. An extract from my journal, dated Chango, states, "From a grassy spur above camp, and not 500 yards away, had a most extensive view of the dear lake; every one had gathered on the height, even the lazy Wanyamezi exerted themselves to see the glorious sheet of boundless water, occupying one quarter of the horizon. The island of Sesseli was on our left-front, and, except an uninhabited island, there was no land visible beyond the lake."

My journal of this date gives some interesting particulars regarding the country at the north-east end of the Victoria Nyanza, namely,—Keengo, an Unyamezi fortune-teller and trader in my retinue bound for Uganda, told me that he had accompanied the late King Soona of Uganda in boats, with 200 soldiers, to the country of Umara, east of Uganda and near to the Masai. The expedition was one of aggression and

plunder, but though it had this famous "M'ganga," or fortune-teller, with it, success did not crown their efforts, and the party returned. It has already been mentioned that the Wamara use slings and stones, instead of bows or spears; they wear armlets of iron like the Wagogo. To this story we may add that no such race was ever met with by us: we give full credit to the account, and we also think that it denotes there is a continuous water route from the capital of Uganda to Umara, as laid down in Speke's map, and that Umara fixes the north-east angle of the Victoria Nyanza to be very distant.

At Weenja, where my camp was upon the 10th, 11th, and 12th of May, I note that from a height of 500 feet I could look down upon the country between me and the lake; it was undulating and marked by numerous groves of plantain, indicating the dwellings of the people. It was a very pretty view, with the lake away to my left.

On the 13th of May, after marching across many ridges with marvellously steep sides, but covered with reeds, grass, and trees, our camp pitched at Kyabogo, whence I had an extensive view of the lake and Sessch island, calculated at five miles' distance. At this place a smart young Uganda officer came up, asking to be shown my sketches, and afterwards escorted me to the top of the hill above the cultivations. Here the polite youth eagerly pointed out to me every place he knew, while I wrote down their bearings. I had taken other bearings of the lake during the day's march. He was giving me a fabulous account of a race living where the sun was just setting, saying that the people were very fierce, and used bows and arrows of extraordinary strength, and talked of "Kassara" as being in that direction, when suddenly another M'Ganda interrupted our conversation by calling on me excitedly to look at the moon. I turned from the setting sun to the east, and saw the moon rising out of the lake, sending her rays upon the placid sea with such glittering effect that all of us who saw it were touched by the same sentiment of admiration. It delighted me to see so beautiful a scene appreciated by the uneducated native of Equatorial Africa, and this shows that those who live in a state of nature are not blind to the beauties in nature.

In order to determine the extent of the Victoria Nyanza at this point, I submitted the following problem to three mathematicians, and add the result:—

On the 13th May, 1862, in lat. $0^{\circ} 25' 0''$ S. and long. $31^{\circ} 35' \text{ E.}$ ($= 2^{\text{h}} 7' 40''$ in time) the sun set and the moon rose about the same instant, as judged by the naked eye; required the moon's bearing at the time of observation.

A's reply gives the moon's bearing, without	$\left\{ \begin{array}{l} 20^{\circ} 19' \text{ from E. to S.,} \\ 69^{\circ} 41' \text{ from S. to E.} \end{array} \right.$
compass bearing	
By compass having $9^{\circ} 44'$ variation	
	$59^{\circ} 57' \text{ from S. to E.}$

C.'s reply gives bearing of moon's centre, { $69^{\circ} 20' \text{ E.}$
without compass bearing {
And bearing with variation applied .. $59^{\circ} 36' \text{ E.}$

A. states that, "At the given latitude, the distance of the visible horizon, as seen by an eye elevated 500 feet, allowing for refraction, is 29.58 miles. The amount of refraction is a good deal uncertain at the horizon. In some states of the atmosphere the distance seen would be considerably greater."

B. replies that, regarding refraction, "The distance seen from an altitude of 510 to 550 feet might be 38 miles."

C. replies that "The distance of the observer from the horizon of the lake, at the bearing of the moon, would be 27.2 statute miles, or 23.8 geographical miles."

From these calculations we therefore know that from lat. $0^{\circ} 25' \text{ s.}$ and long. $31^{\circ} 35' \text{ E.}$ the Lake Victoria Nyanza extends for 27 to 29 miles at least, and in the direction of $59^{\circ} 47'$ from S. to E.

Between the right bank of the Kitangule and 30 miles south latitude we had crossed one noble river, countless streams and marshes, in fact, a gap in the land of fifty miles; but now we entered upon the plateau of the country, cut up into steep hill-spurs pointing to the lake, of which we had extensive views during a distance of 10 miles, when we came to another series of dreary plains covered with slush, mud, and water, or cut up by streams, which were breast high, with firm sand bottoms.

This part of the Lake Region is particularly interesting, as it is upon the Equator, where the River Katonga falls into a great bay of the lake. Here I was told that my wishes would be acceded to, and I should be allowed to proceed to Uganda capital by water; the baggage was carried to the side of the lake and put in a canoe of five-planks, but the water came in in such quantities that we should have been swamped. The project was abandoned, much to the delight of my followers, and we therefore made arrangements to proceed by land.

The blue lake had small surging waves upon its surface, and washed up *débris* of seeds and reeds. The shore was flat to a considerable distance inland, and had generally a fringe of gigantic reeds concealing the view. Katonga Bay did not seem to be deep water; it is horseshoe-shape, 3 miles across and 5 long, and exposed to the south-east; a gentle breeze blew upon it, and there was an island of grass at the north-west end; the valley contracted as it extended out of view to the north-west.

At the ferry of the Katonga, I got into a canoe which conveyed us through a passage in papyrus for 200 yards, here we changed into better canoes, and paddled through open water for a mile across the bay. The natives would not allow me to sound, nor to put my hand into the water, but they were full of

fun and raced across in great humour. When within a mile of the shore, reeds and grass appeared, and there was no channel large enough for our canoe, so we jumped into the water, which was 4 feet deep, and commenced plumping and plunging amongst the curious grass (*Pogonatherum* sp.?) which floated like hay upon the lake. This was very exhausting work, for I was weak from illness, and the heat of the sun was great; but fortunately the footing was firm, and my bare feet did not suffer so much as my head.

The three canoes which ferried us were propelled by paddles of solid wood, 4 to 6 feet in length; the men sat upon cross sticks, facing the front, scooped up the water, splashed and raced their neighbour-canoes like a lot of children at play, but they took no liberties, and were perfectly respectful to their charge. The only thing that I objected to particularly was their insisting upon killing the three or four fowls we had as food, before ferrying the river: it seemed so very silly, but they said that we should run the risk of being attacked by hippopotamus in our passage across if the fowls were left alive, this animal having a decided taste for poultry. My chickens were therefore sacrificed, which threw more into the larder than was necessary.

From the Katonga Bay to the head-quarters of Uganda, the distance is 60 miles across hill-spurs, bogs, and streams; there were, say, thirty of these spurs, or ups and downs, which radiated to the lake, and there were the same number of streams and bogs to cross; their depth varied from 1 foot to 7 feet, and a remarkable feature is connected with them that, at this point of our journey, between Congee and Namagoma, the first half of the streams ran into the lake, and, say, the last half of them ran to the north, showing a distinct watershed.

The M'werango and the Moogga Myanja were the largest of those flowing to the north; the former, we were informed, comes not from the lake, but from a rock s.s.w. of Namagoma, and joins the other stream, and forms the Kuffo River seen at Unyoro. The M'werango is 300 to 400 yards across, but its water is entirely concealed by the dense aquatic vegetation growing in it. A passage, the width of three men, has been cut through this, and an attempt at bridging had been made by placing spars of palms, &c., upon forked sticks; but these had been displaced, and delayed the crossing of our traps for one hour. I swam across the last half of this bog. Little or no flow was visible, but the direction to the north was unmistakable, for the floated logs indicated it. The other large stream, or bog more properly, was the Moogga-Myanja, which also was completely hidden by aquatic vegetation. It was 500 yards across, and a winding passage eight feet wide had been cut in this, form-

ing what might be called a tunnel, for the graceful papyrus met over the passage, forming an arch over-head. Its depth was 5 feet or so, coming up to the breast, and the footing was different from the majority of the bogs; it was of hard sand, quite pleasant to walk over. The Myanza had not much flow visible, but there was enough rippling noise through the rushes to tell that there was a flow to the north. I inquired where the stream came from, and a tradition was mentioned concerning it. It seems that "Moogga" was one of the wives of the late King Soona, of Uganda: she became dropsical and was sent for medical advice to a place south-east of this; the result was that she was delivered of a child, and this river began to flow as a happy omen, and has continued ever since!

Where these rivers have their rise, whether from the hills between the part we crossed and the lake, or whether they are in actual communication with the lake, neither of us observed; our information was from separate sources. But, wherever they rise, their flow is to the north, and there is nothing impossible in their channels being in communication with the Victoria Nyanza; indeed, some natives said they are so. But there is one thing remarkable about the streams we crossed which were flowing towards the lake: their water was brown and their sides were of tenacious black mud, showing that this alluvial had accumulated from a large area, for a long distance, and for ages; whereas, when my party came upon streams which flowed northwards, there was scarcely any mud at their sides, and their footing was of firm white sand, consequently, the leg came out of these streams without the black booting of mud gathered in all the bogs which flowed to the lake; and this clearness of water, with absence of alluvial deposits, indicates to me that their courses must either be very short, or that they may be percolations, or may-be overflows from the Victoria Nyanza. I incline to the belief that they do not flow direct from the lake.

A long circuit had been made by both of us in our journey from Kitangule River to Uganda. We had waded through miles of bog and of swamp, which may be called part of the Great Lake; we had seen the great degradation of soil produced by frequent falls of rain, and that the mud so carried to the lake had formed, not at the mouths of the two great rivers, but between them, at points where there was less motion in the water. The island of Sesseli lies opposite a mainland where there are few or no streams, and extends for forty miles. We might have avoided these swamps by following a route ten miles more to the west, where there may be a watershed, and where, when railways are introduced, no bridging of streams

every mile or two will be necessary; but we were constantly pressing to the lake side, and so had to submit to the inconvenience of swamps and the want of provisions, which would have ceased altogether if we had marched nearer the lake.

Attempts at bridging had been made, but they were of a feeble kind; the logs were generally under water, resting upon a foundation of rush-roots, or they were otherwise displaced, so that, with bare feet, their rough surfaces were more painful to bear than the stubble of the papyrus. Swimming even in shallow muddy water was preferable to walking through it.

Having finished the description of the route to Uganda, some account may be given of the prince who ruled there when we made our visit.

M'tessa is one of forty sons besides many daughters born to the late King Soona, of Uganda, by many wives. His family are said to be a branch from that of Unyoro, and they extend as princes and nomades as far as Kuzeh. He is the ninth king, and the names of all the previous kings are known from the fact that their tombs are protected and preserved by the Crown to the present day. In these tombs the lower jaw-bone and the bones of the thighs are deposited. At each new moon the present king has the bones of his father conveyed to him, and a ceremony, lasting two or three days, is gone through upon this occasion.

He is not the eldest son, but was selected by the people, or by his court, for his noble bearing, and as a likely successor to his father. Now he must be about thirty-five years of age, fair for an African, not thick-lipped, but with woolly hair, handsome figure, five feet eight inches in height, and manly in all his pursuits, being fond of boating, shooting, and other sports. He has no knowledge of reading and writing, or of time, but counts by sticks, measures time by seasons, or moons, or by saying that so-and-so would take place when a cow's calf would have calved, or when there would be a grandson or great-grandson. He has a remarkably quick perception; and is naturally finely dispositioned, often showing kindness and mercy to those he rules over, but the existing law of his country obliges him to assume the fierceness of the lion when he has to execute or punish criminals, events of frequent occurrence, and often for very trivial offences. We daily observed three or four men and women being led away to be killed. The mode of execution is by a blow at the back of the head: no burial takes place; the victims are cut up for vultures, which sit languidly upon the trees.

The public of Uganda enjoy the observance of great state at their court, and assemble in hundreds round the royal residence daily. They allow the king as many wives and houses as

he chooses. We saw two or three hundred of his wives. Wishing to make him the greatest king in Africa, they give him authority to punish without trial, and plunder slaves, cattle, crops, boats, &c., for him wherever they can find them. They keep his brothers always in irons—that is to say, the brothers have chains to their legs and arms; but though thus degraded in our eyes, they came so chained to call upon us, and were as happy and merry as any young men could be. They laughed, chatted, amused themselves, and made many inquiries of us in the presence of the king their brother without ceremony or appearance of restraint. This extraordinary custom seems traditional, and prevents their obtaining an ascendancy over the sovereign elect; but it does not last long, for when M'tessa finishes his period of probation as Prince Regent, and has been crowned Sovereign, all these young fellows are placed upon a pile and burnt. They showed us the piles of wood upon which they were to be put when the day came, and spoke of it without any indication of fear or of regret. They seemed determined to enjoy life while it lasted, joining their brother in all festivities and all excursions for sport and amusement. Separate houses had been allotted to them and their families—for they were permitted to marry; but they were not often seen within the grounds of the palace.

The dress of the Waganda is the most picturesque seen in Africa. It is made of the bark of a fig-tree, cut in strips, which are carefully prepared, and sewn together into sheets as pliant as a blanket. This robe is tied over the shoulder in a large but neat bow, and its folds fall to the ankles. Over this they wear another robe, made of antelope or goat skins, beautifully sewn together, and well prepared, consisting often of many-coloured skins; or the more common robe is that of a cow. The showier the fur is, the more they admire it. A white skin with black spots is a favourite skin, and the bark cloths most approved of are of a rich maize tint, harmonising remarkably well with the bronze skin of the Waganda.

During a march, the Waganda roll up these fine clothes into a long, tight bundle, and carry it on their heads, leaving their hands free for their spears and shields; the pith shield is tied on to the head during rain, and forms an umbrella. A bandage is worn between the legs on these occasions of undress, or when going across bogs, but on arrival in camp they put on their smartest robes, and strut about with canes in their hands.

The day after I had joined Speke at Uganda, while we were seated in the afternoon writing our journals outside our huts, a mob of people passed our enclosure, and then came bounding through our fence in the most uncereemonious manner, and stood

before us. This was the king and his brothers, who came to return my call of the previous day. He was not the puppet of yesterday's dnrbar, but was dressed like a negro melodist, in a chintz suit bound with red, made by one of our men, to resemble the cut of our clothes. He had evidently expected to be admired, but we only laughed heartily, for the contrast between him and his ragamuffin brothers was too ludicrous. They were somewhat mangy-looking, and wore tattered bark clothes. One boy was heavily ironed and handcuffed, another had imitated our wideawakes, and wore one of leather, others carried guns, rifles, a dove, a dying vulture, a hornbill, all of which we were asked to look at. I rose on their arrival, and offered my iron stool to his majesty, who sat turning over the pages of my journal and sketchbook with as little patience as a monkey. His brothers were round him, shouting with laughter, and hungrily tearing at sticks of sugar-cane. When the books had been examined, he asked to have some gunpowder, though he had got three pounds of it the previous day; next he wished to see the pictures I had made of Rumanika of Karagweh, asked whether he himself had been drawn yet, and finally told me to take my hat off, to show his brothers my head. This over, he suddenly rose and left, ordering Speke to follow; as I was still lame, I could not accompany the party, they went at such a pace, but I strolled after them, and met two more brothers, accompanied by keepers, and heavily ironed, hands and feet. The poor fellows smiled at me, and looked quite happy and well; but, from the weight of their chains, they were unable to walk fast enough to keep up with the king's procession. These young princes were the only persons we saw in irons while in Uganda, and I am inclined to think that this custom is looked upon as a royal privilege. While continuing my walk a number of boys, bearing bundles of reeds, met me, and asked what direction their king had taken, as they wished to join him. They were torch-bearers, and flew after Mtessa, who returned after dark to his residence by the light of these torches and the rattle of his wonderful drums.

Speke returned at dusk, having seen the king amuse himself with shooting, eating, and changing his dress several times from suits carried in a japanned tin case he had got from us. He had not dined, and declined some beef sent him by the king because no plantain wine had accompanied it, and got home without any particular adventure.

The day following this picnic and visit we had many messages that the king must see our sketches at once; also all our guns, with several charges of shot and powder for them. The birds he had shot were brought us, so that they might be painted for

him. All these silly requests were complied with; but our guns sent for his inspection were kept for a few days.

Every day we were pestered by messages such as the above, brought us by impudent young urchins as sharp as needles, who would enter our huts to examine what we had, and then leave with sketches, photographs, pairs of shoes, or anything they saw which might amuse their master. Speke permitted all this, and humoured every whim of the king on purpose to be allowed to navigate the lake, visit the Masai country, and ultimately get away. Also he felt for these young boys; for, if their king's orders were not carried out to the letter, they would have their ears cut off, at least, if they were not killed outright.

The mother of this king was still alive, and had to receive as much attention, and be equally humoured with the son. We constantly called upon her; but she would often affect not to have time to see us, though she kept us for hours in waiting for a reception. We could make no move without her consent. It was proposed that, while Speke was exploring the lake and the Masai country, I should go to Karagweh by water for some things that had been left there; another proposal, coming from the queen, was that Speke should travel to Egypt and back while I remained, as Her Majesty wished Speke to return to her, and to see a little more of me. Offers were made of wives and land if we chose to remain, for neither the king nor his mother wished to part with us; so that the game was a difficult one, requiring wonderful tact and patience.

The queen was a humorous old lady, and asked Speke one day whether he had anything that would cure her of dreaming of her late husband "King Soona." Speke replied, "Yes, he had, but he felt a delicacy in mentioning it." Her Majesty pressed for an answer; and he said this was a common complaint in his own country, widows generally suffered from it, and the remedy was marriage. She laughed heartily at the joke, and no doubt gave him an extra allowance of plantain for his men.

On one occasion Speke held the hand of the king from stabbing one of his favourite women, who offered to assist his Majesty across some water, and he was asked on several occasions by officers of the Court to intercede for their sons, who were condemned to be executed, and his request was generally responded to.

M'tessa had confidence in Speke and his men. While rowing together on the lake, our men rowed the boat in which the king sat. A sketch of this arm of the lake, taken a few miles from the capital, has been called "Murchison Frith," after the late President of this Society, Sir Roderick Murchison.

The mode of living in Uganda is different from that of all the

countries we passed through. Travellers are considered as guests, and the people are bound to give them shelter and food—and to cook their food—without reward. This is a most iniquitous system; the people feel the tax heavily, for they have to entertain the numerous guests who visit their king—the only one who takes any recompense. He accepted from us guns, beads, cloths, and other presents, while his people dared not take such articles. Our men did not like these terms, and became mutinous from want of food; for, unless they risked their lives in plundering, they would have starved, as the allowance of his Majesty for their support was only ten bunches of plantain for sixty men every fifth day. Beef, mutton, and fowls were rare commodities; and the king was loth to part with such, unless to Speke and myself, not Mussulmen, like our followers, who refused the food of animals killed and cooked by Waganda.

Plantain wine of excellent quality is made here, by putting the juice of the fruit into canoes, or rather long troughs of wood, having a longitudinal slit, and allowing it to remain for three days. The opening is closed by plantain-leaves, covered over with litter and earth, to prevent any great fermentation. On the fourth day it is removed in large gourd to the houses of the wine-makers, who drink it during their meals, or when paying visits, in the same way as practised in Abyssinia with honey-wine. I should have mentioned that the flour of parched grain must be added to the plantain-juice to assist its slight fermentation, and that, when clear and sparkling, it is a delightful beverage.

The climate of Uganda is decidedly relaxing, being humid from the misty showers which fall almost daily, and from its proximity to so large a surface of water as the lake. During June the daily fall was not sufficient to measure in a gauge, but every morning the valleys were veiled over by a thick mist, caused by the condensation of the air, and it very often happened that the sun was invisible all day from the thickness of the atmosphere. On awaking each morning in Uganda, my eyes were partially sealed, as if with gum, but whether this was from weakness or from the moist atmosphere I cannot say. We had one thunderstorm during June; and it created rather a sensation, for one of the houses of the king was set on fire by lightning. Rain and hail accompanied it.

The vegetation in such a country was gigantic upon the higher grounds, where dense thickets of reeds, ten feet high, grew naturally upon the soil of red clay. The staff of life in Uganda—the plantain—grew in profuse quantities upon the faces of the hills, covering them with its leaves, which waved with the breeze. In the valleys and deep dells, by the lake

side, the vegetation of trees, creepers and aquatic plants was lofty and luxuriant, though not so tropical, as to ferns and orchids, as was expected. However, much has still to be explored in this respect.

Mean temp. in June	..	..	..	..	..	69.2
Extreme heat ditto	..	..	..	..	..	79
Extreme cold ditto	..	..	..	..	..	60
Fall of rain ditto	..	..	..	..	..	0.55
Prevalent wind ditto	..	..	..	..	..	S.E.

EVIDENCE AS TO THE EXTENT OF VICTORIA NYANZA.—Now that we have traversed the western and northern sides of the Victoria Nyanza Lake, it may be as well to give, in a concise form, the personal evidence and the native authority we have for its extent, and to offer some remarks upon Mr. Wakefield's routes in Central Africa.

Personal Observations.—The most southern point of the lake was determined by latitude and longitude, at Muanza, in 1858, by Speke, who took the altitude, making it 3740 feet, with the same instrument which determined the altitude of Lake Tanganika, namely, by a bath thermometer; his boiling one having been broken in 1857, as stated by him in vol. xxviii. p. 244, of the 'Journal of the Royal Geographical Society.'

The most northern and western points upon the shores of the lake were fixed by latitudes and longitudes, and bearings taken by Speke, and a few by myself, in 1862.

We thus have a triangulation fixed astronomically, about which there never can be a doubt, and we have other intermediate points of vision on the lake, as stated in the following extracts:—

EXTRACTS FROM SPEKE'S WORK, 'THE DISCOVERY OF THE SOURCE OF THE NILE.'

Page 214. "Karagweb, November, 1861. Travellers conceived the Victoria Nyanza would take a whole month for a canoe to cross it; they thought the Luta-nzige might be crossed in a week."

Page 265. "Ngambezi, 18th January, 1862. To the right, at the end of the spur, stretching as far as the eye could reach towards the Nyanza, was a rich, well wooded, swampy plain, containing large open patches of water, which not many years since, I was assured, were navigable for miles, but now, like the Urigi lake, were drying up. Indeed it appeared to me as if the Nyanza must have once washed the foot of these hills, but had since shrunk away from its original margin."

Page 272. "Mashonde, 23th January, 1862. Once across, we sought for and put up in a village beneath a small hill, from the top of which I saw the Victoria Nyanza for the first time in this march."

Page 273. "Meruka, 31th January, 1862. After crossing more of those abominable rush-drains, whilst in sight of the Victoria Nyanza, we ascended the most beautiful hills, covered with verdure of all descriptions."

Page 276. "Ugonzi, 5th and Kituntu, 6th February, 1862. After crossing many more hills and miry bottoms, constantly coming in view of the lake, we reached Ugonzi, and after another march of the same description, came to Kituntu."

Page 276. "Kituntu, 7th February, 1862. I became now quite puzzled whilst thinking which was the finest spot I had seen in Uddu, so many were exceedingly beautiful; but I think I gave preference to this, both for its own immediate neighbourhood and the long range of view it afforded of Uganda proper, the lake, and the large island or group of islands, called Sécé, where the King of Uganda keeps one of his fleets of boats."

Page 281. "Nyama goma, 15th February, 1862. When this was concluded, I went with Nasib up a hill, from which we could see the lake on one side, and on the other a large range of huts said to belong," &c.

Page 302. "Uganda capital, 26th February, 1862. A discussion which ended by the king promising to send an officer by water to Kitangule." (This is quoted in proof of there existing a water route from the capital of Uganda to the river Kitangule-Kagara, near Karagweh.) Also at page 317. "On reaching home I found Maribu a M'kungu, with a gang of men sent by M'tessa to fetch Grant from Kitangule by water."

Page 392. "Cowes, 23rd April, 1862. The whole of the scenery, hill, dale and lake, was extremely beautiful. The Wanguana in my escort, compared the view to their own beautiful Poani (coast); but, in my opinion, it far surpassed anything I ever saw, either from the sea or from the coast of Zanzibar."

Page 392. "Cowes, 24th April, 1862. Now for the lake.—The beautiful waters are reached, a picture of the Rio scenery, barring that of the higher mountains in the background, which are here represented by the most beautiful little hills.—The king—whilst I sat in the same boat with him, —to approach the hippopotami. But the waters were too large and the animals too shy," &c.

Page 396. "Cowes, 25–29 April, 1862. We went boating as usual all day long, sometimes after hippopotami, at others racing up and down the lake." Page 399. "First up the creek and then down nearly to the broad waters of the lake." "There was a passage this way, it was said, leading up to Usoga, but very circuitous, on account of reefs and shoals, and on the way the Kitiri island was passed; but no other Kitiri was known to the Waganda, though boats sometimes went coasting down the western side of the lake to Ukéréwé. The largest island on the lake is Sécé, off the mouth of the Katonga river," &c.

Page 428. "Uganda, 5th June, 1862. We met Murondo who had once travelled to the Masai frontier. He said it would take a month to go in boats from Kira, the most easterly district in Uganda, to Masai, where there is another N'yanza, joined by a strait to the big Nyanza, which King M'tessa's boats frequent for salt; but the same distance could be accomplished in four days over land and three days afterwards by boat."

Page 434. "Uganda, 18th June, 1862. I then begged he would allow me, whilst his men were absent at Unyoro, to go to the Masai country, and see the salt lake at the north-east corner of the Nyanza and to lend me some of his boats for Grant to fetch powder and beads from Karagweh. This important arrangement being conceded," &c.

Page 437. "Uganda, 26th June, 1862. This morning we had the assuring intelligence from Kaddu that he had received orders to hold himself in readiness for a voyage to Karagweh, in twenty boats with Grant, but the date of departure was not fixed. The passage was expected to be rough, as the water off the mouth of the Kitangule-Kagara (river) always runs high, so that no boats can go there except by night, when the winds subside, and are replaced by the calms of night."

Page 440. "Uganda, 29th June, 1862. K'yengo proposed my going by boat to Unyoro, following down the Nile."

Page 467. "Ripon Falls, 28th July, 1862. The expedition had now performed its functions. I saw that old father Nile without any doubt rises in the Victoria Nyanza, and, as I had foretold, that lake is the great source of the holy river which cradled the first expounder of our religious belief. I mourned however when I thought how much I had lost by the delays in the journey, having deprived me of the pleasure of going to look at the north-east corner of the Nyanza, &c. But I felt I ought to be content with what I had been spared to accomplish, for I had seen full half of the lake, and had information given me of the other half, by means of which I knew all about the lake, as far, at least, as the chief objects of geographical importance were concerned."

The lake was seen by me in the same way, but from different views, as we each travelled alone from Karagweh to Uganda; and I made sketches, and bearings, and notes of sea-horizons, all of which exist. All the hill-spurs, the countless streams upon the west and north-west of the lake, and the two large rivers Kitangule-Kagæra and the Katonga, point to, and run towards, one great centre, namely, the Victoria Nyanza; and the body of water thus accumulated was seen to escape from the lake by the river "Nile," at Ripon Falls, and was traced down the northern slope of Africa to the Mediterranean Sea.

Native Testimony.—The Arabs, Suay, Moossali, &c., of Unyanyembe, told Speke of a great ocean = Bahir, far greater than the Tanganika Lake, and probably the source of the Jub River, which was in a northerly direction from them. They never spoke of there being *more* than one lake, and knew that it extended to Uganda.

Joomah, a trader, had sailed from Muanza towards the mouth of the Kitangule River, and he assured me that M'tessa, the king of Uganda, would send his boats for me to the mouth of the Kitangule. This voyage would take two months.

The natives of Karagweh said we might go by water from the Kitangule-Kagæra to Uganda, and that the previous king of Uganda had been on a hunting tour by water to Kitangule River: they all spoke of its vast extent. The king of Uganda, in 1871, sent messengers to the Sultan of Zanzibar, requesting that builders of ships might be sent him to navigate his inland sea. So wrote Dr. Kirk to me.

The Waganda people told us that they navigate the lake to the east for one month, then pass through a strait, probably the M'tanganika of Mr. Wakefield's routes, and enter another "Nyanza," where they procure salt (*vide* p. 428 of Speke).

None of the natives living upon the shores of the lake, or away from the shores, could tell how far the lake extended, or who lived upon its eastern shore. Neither they, nor any one else, had ever crossed the lake one way or other.

Captain Speke's map in the 'Journal' of the Society, was constructed by him entirely from astronomical observations, from bearings, and from information sifted on the spot. I have the utmost reliance on his integrity and judgment, believing him to have been as honest in all his purposes as it is possible for any man to be, and I look upon his map as a correct rough delineation of the countries we saw and heard of; capes, promontories, and minor details, have been left for the surveyor to fill in.

Besides these evidences of the extent of the Victoria Nyanza, we know that there is but one land route from Unyanyembe to Uganda, namely, all round the west side of the lake. We never heard of any one dwelling in the portion of the globe where Speke has placed the Victoria Nyanza. We never heard of islands being far away in the centre of the lake, nor of people sailing from any such islands, and therefore we concluded there can be none beyond those we saw near shore. Looking across the lake we never saw any land, peaks, or mountains, neither did we hear of any. It was also clear to us that between Muanza and the Ripon Falls there is but one expanse of water, for the country upon the west of the lake is strikingly level.

NOTES ON MR. WAKEFIELD'S ROUTES IN CENTRAL AFRICA.*—Regarding the country to the east of the Victoria Nyanza, the natives living upon the south of the lake have visited it so rarely that the information which I obtained regarding it was scanty. Geographers will welcome this list of routes obtained by Mr. Wakefield from "Sadi," who had penetrated various new regions.

The chief interest to me in this route-list of Sadi, lies in the recognition of many of the names applied to the stages, but I have been unable to connect his districts and races with any countries or races we ever heard of.

The native names are of two classes, those familiar to East African language speakers, and those which belong to a more northern—almost Abyssinian dialect. Of these two classes there are equal numbers, and in examining the east-coast language, I am of opinion that the names are not those applied by the inhabitants of the country, but they are given to the country by the traders from the east coast—a confusing system to a map maker. For instance, in the route taken by "Speke and Grant" we were quite familiar with Sadi's names to camps, such as Tauga, M'io, Kundu, Kisiwani, Mikindumi, Mikuyuni, Kisongo, Kitumbi, Ngoroinne, M'buyuni, Vibokoni, M'kwajuni, M'swakini, Ziwa-la-M'bu, Fau (called Faroo, Rhinoceros on our route), Wa Suku, &c. &c., because they are the Kiswahili names of well-known fruits, colours, feet, trees, teeth-scrubbers, animals &c. &c., and refer to natural objects, peculiar to the spot where Sadi's caravan encamped.

Mr. Keith Johnston states at page 333 that "not one single name of district, people, or place, given in the new routes, has any such remote resemblance to names, reported by Speke and Burton, as to warrant an identification with any one of these." This is perfectly correct so far as the actual names of the country are concerned, and also so far as the district and race names, that

* *Vide* 'Journal of the Royal Geographical Society,' Vol. xl. p. 303.

they are all totally different from anything we met with; but not so with the above names or camps, given in Sadi's route, for they are familiar to every Kisumu scholar, and should be weeded from what may be geographical districts.

Sadi states that he is unacquainted with the form "Nyanza" and calls the lake "Nyanja." The natives of Uganda pronounce the word Nyanza with a z, other races with a j, others with an s, and I myself have no doubt that Nyanza, Nyanja and Nyassa are one and the same word, for they all signify lake, and the spelling of them is a matter of taste. The word Loeroo—probably Dr. Livingstone's word Moero—is also applied to lake or a silvery sheet of water; we heard it used for the Urigi, the Karagweh, the Uganda and the Unyoro (Luta-nzige) lakes, Loo, Moo, and Roo being synonymous, and applied as a prefix to flowing water.

The name Bahr ya Ukara evidently means the sea of Ukereweh, or, "the sea with the island," Kirwee, Kirwa and Keera, being the native names for an island at Nyassa and Victoria Nyanza, and it implies the south-eastern side of the Victoria Nyanza.

Bahr ya Pili—in Mr. Wakefield's map—literally the "second sea." This is the usual natural form of expression adopted by those east-coast sea-board people, who call the ocean Bahr, and who, on visiting an inland, fresh-water sea like the Victoria Nyanza, would, from its extent, name it the "second sea." The Unyanyembe Arabs applied the same term of Bahr (= ocean) to the Victoria Nyanza and spoke of Bahr Usoga, Bahr Misr, Bahr-ingo. Mr. Keith Johnston thinks that we must look for a "first sea" near the "second," for Baringo to be the first sea and Victoria Nyanza the second; but this would be inconsistent with the native mode of expression; the native knows but one ocean, and anything resembling it he immediately calls a second sea, as Bahr ya Pili. If it were accepted that the first sea visited would get the first name and the second the second, then we might have either the one or the other sea coming first, according to which came first upon the route.

At page 310 Sadi states that he had travelled for sixty days (marches) along the shore of the Victoria Nyanza, without perceiving any signs of its termination "neither had the natives with whom he had conversed, been able to give him any information about its southern or northern limit." As Sadi had not been to the most northern or most southern point of the lake, and as the route-list has no bearings in figures, I think his "sixty marches," say of six miles daily, equal three hundred and sixty miles, must be exaggerated by at least one degree, for he has made the lake larger (by this amount) on the east side than it is on the west. I can quite conceive that, most probably, no people on the eastern shore of the lake, could tell him its extent, for they have no means of making the journey by water and the different races are so non-international that they have little communication. The case is very different on the west shore of the lake where a trading route has existed for upwards of twenty years to Arabs, and hundreds of caravans have traversed it up and down, whereas the races upon the east side of the lake are notoriously inhospitable, no trade may exist there; the region is one of salt lakes without the fine rivers of the west shore, and for these reasons it is an unfrequented almost unknown region to the Arab community of Central Equatorial Africa.

With regard to the width of the lake, "Sadi was informed that it required six full days—from sunrise till sunset—to cross it in canoes, but that, if the men went right on, *day and night*, the journey was accomplished in *three days*." Page 310.

We made many inquiries, but never could hear of any one having ventured across the lake. The canoes were mere hollow logs or planks (five) sown together, quite unfit for anything beyond coasting or ferrying; I speak of the best canoes we saw—those of Uganda. No native of the interior would ever

risk his life or property in such a venture, they would never move out of sight of land, compasses are unknown to them, and, referring to the statement, that it *was* accomplished by proceeding *day and night* for three days, my experience is that no African born would attempt the passage in canoes by day and far less by night. Sadi was probably calculating what *might* be done in a proper boat or ship, and gave his opinion to Mr. Wakefield. The average width of the lake laid down by Speke, from Arab information, is somewhat the same as stated by Sadi, namely so many days in a boat, or say fully two degrees of latitude, and, till this is checked by actual inspection, it may be accepted as tolerably close to the truth.

Sadi "could descry nothing of land in a westerly direction except the very faint outline of the summit of a mountain, far, far away on the horizon." Page 310.

The exception made of the "summit of a mountain," is, as far as we observed, an impossibility, for there are no detached mountains or high summits along either the west or north side of the lake; there are hills of course, but all are of uniform, almost level, height, without any conspicuous cones, and averaging five to eight hundred feet above the level of the lake. However, it may be possible, though improbable, that, as Mr. Kelth Johnston states, Sadi saw a high island in the middle of the lake; we will not deny it, but we neither saw nor heard of its existence.

The statement that the lake has a daily tide is a delusion, though it is quite true that its shores have "drifted foam" and other light matter of spongy vegetable materials, in quantities cast up in line upon the beach; all lakes of any extent show this kind of beach wherever they may have flat shores and shallow water. To the eye of an uneducated native this would be very likely to convey the idea of the shores of an ocean. The small rippling waves flowing in like breakers, even upon a calm day, would also make Sadi imagine the lake to have a tide, but no such exists in the Victoria Nyanza.

I am only able to account for Sadi's story regarding the "three-masted ship" with "white sails and bowsprit", having visited the lake "eight or nine years ago" (now ten to twelve), page 310, in this way, namely, it is the same account we heard before reaching the lake. We found that the report referred to the boats upon the Nile at Gondokoro, in 5° S. latitude, but, there was this difference that none of the Nile boats have three masts, and none of the Nile boats can possibly navigate up to the Victoria Nyanza, from the number of waterfalls upon the Nile, south of Gondokoro. Sadi's three-masted boat must have been built on the shores of the lake and query, by whom? We never heard of any such boat; neither has any been built there since then, and I believe Sadi was misinformed. The channel he saw is common upon the shores of the lake, it is made by the natives for their canoes and indicates shallow water with vegetation.

In commencing these notes upon Mr. Wakefield's paper, it was remarked that two distinct forms of language were observable. One, the familiar patois of Eastern Africa, and the other from Kikari, a strange dialect, in which only a name or two have been recognized. The words "Krok" and "nyarus" sound the same as the Uuyoro language, and it may be remarked of Nyarus, that it sounds Uuyoro corrupted, for the country is as often called Uuyaro as otherwise, in fact, at Madi where the dialect is very broad, it is always pronounced Uuyaro. Nyaro and Uuyaro sound the same and if we could account for the s in Uuyaros, we should have Nyarus, the name of the river of Mr. Wakefield's map made to flow into and out of Baringo lake, but I am unable to make the Nile out of it, though the words appear to be the same. The people who live upon its banks are similar also in their habits to the Wanyoro.

Some remarks may be made upon the people said by Sadi to dwell to the

east of the Victoria Nyanza, comparing their habits with those we passed through, in order to mark any affinity.

I. The Wa Ukara. From their proximity to the island of Ukereweh and from their arms, implements and language, they might be any of the races in Umyamezi (the country of the moon), except that their women wear kilts of skin not long enough for decency, and their huts are built of mud and wattle—both of which denote a different race to the Wanyamezi.

II. The Wa Dalcho. A name we never heard mentioned. In respect of their using spears and shields, bows and arrows, calico, &c.; no race can be determined, unless the length, shape and make of their spears be minutely described; the same with the shape of the skins their women and men wear, and the same with their caste marks. One thing makes them very peculiar: not keeping fowls, having fine sheep, and sugar. They must live upon a route frequented by traders, as calico is used by them.

III. The Wa Sumburu. I do not remember this name either. They are a people entirely different, judging from Mr. Wakefield's account, in their mode of life from any we ever met with, excepting the Wahuna, the Nomads of Karagweh, who, like the Wasumburu, do not eat fish, keep immense herds of cattle and never till the ground themselves. This race resemble the Hamaran Arabs of Baker, who are dexterous horsemen and hunters, keeping camels and horses like the Somali.

IV. People of Baringo. I am unable to accept the derivation given of this word, namely canoe. Bahr= ocean, is distinctly indicated. Ngo, the termination, puzzles me, but I conceive it to be the same as the termination in Kilimangao= the Shield-like hill, or the hill resembling a bare shield with a high boss in its centre, for we know that the cone or cones of this mountain rise 14,000 feet majestically from the surrounding country, thereby resembling the native shield. I therefore conclude that the Baringo lake, with its island, not being so distant from Kilimangao, has been likened by native travellers to a shield with its boss and called Bar-ngao, the shield-like sea, a sheet of water with an island rising from its centre. Joomah, whom I met at Karagweh, and who was a native of Mombas, always spoke of this mountain as Kiliman-gao, and not as Kilimanjaro. Speke says the derivation of Baringo may be a corruption of Bahr (sea of) Ingo.

V. Wa Suku. Mr. Wakefield tells us the people dwelling in the north of Baringo, are called by this name, which sounds the same as the name given generally to the "north" Usukuma by east-coast and Wanyamezi people. We never heard of the name being applied to any particular race, and the name of their country "Lugume" or "Suku Lugume" sounds very like what the natives would call a "northern swamp," and we are told by him that it is by the lake, or the banks of an ample river and not in a mountainous country.

VI. Wa Ligeyo "live on the western side of the Baringo lake, &c." The nearest approach we met with to this name is the Walegga, a race who visit Unyoro from beyond the Luta-nzige lake, but I cannot believe the two races to be identical. The Walegga we saw had all their lower incisors and (?) their lower canines extracted, they cauterized their foreheads, and their arms were marked in front by short, straight, horizontal blisters or cuts.

—VII. Wa n'jerusi = "Nyarus people." I have already mentioned that Nyarus may only be a corruption of Wanyoros, and it is a curious similarity in the two races—if they are distinct—that they both have plantations, herds of cattle, live on either side of a river, they prepare and preserve fish by splitting them up and drying them in the sun, and, which is also remarkable, they both take refuge in islands or inaccessible parts of the river when attacked. But without more material and the bearings in figures of the route traversed by Sadi, it is needless to make further speculations.

IV.—UGANDA TO GONDOKORO.

After receiving permission to leave for the north from the king of Uganda, we determined to visit the outlet of the lake, even without his consent, whenever the opportunity should offer. Accordingly, having proceeded three stages over spurs of low hills with bogs flowing eastwards, our party divided. Speke with ten men went to visit the exit of the Nile from the Victoria Nyanza, while I, still unable to walk far, proceeded north, making my way into Unyoro, where he was to join me by sailing down the Nile.

He reached the Nile at Urondogani, traced it up to the Ripon Falls, where the river leaves the lake from a frith similar to that nearer the Uganda capital, and called "Murchison Frith." All view of the lake was obstructed by a low line of hills which enclosed this frith or bay, but Captain Speke described it as a wild scene altogether. At the falls, hippopotami and crocodiles swam lazily in the river, and fish jumped up at the falls, where men were collected spearing them. The width of the river here at the Ripon Falls, where it leaves the lake, was 150 yards.

Having made some sketches, collections of the fish, shells and animals, and taken the altitude, 3308 (?), he descended the river with the intention of joining me by water at Unyoro; but he was not permitted to do so: as he had not obtained the sanction of the Wanyoro authorities, the natives attacked his boats, and prevented his further progress. He therefore joined me by land, where I also had a reverse, for the Wanyoro told me that there was no permission to travel through their country; and I had to retrace my steps also. We deliberated as to the course to be pursued, and determined that, if we could not get down the Nile, we should get a thousand men from the king of Uganda, and promise him 100 loads of gunpowder, 100 of lead, 100 of beads, and 100 of cloths, in exchange, and so force our way through the Masai country, passing Kilimangao, down to the east coast.

Happily for us this was not necessary, for, now that our camps were united, the Unyoro people had less suspicion of us; and, to our great joy, we were permitted to proceed northwards by slow stages.

After leaving the capital of Uganda, for three marches to its north, the country is one continual up and down, over low hills of a uniform height, and through streams and bogs. Eight of the latter were crossed during the first march. As we proceeded, this kind of country subsided into wide and low undulations, into waving plains, and, ultimately, at Unyoro, we had flat country,—seldom were detached or solitary hills visible.

Between the two capitals of Uganda and Unyoro—a distance of 80 miles—we crossed thirty to forty streams, burns and bogs, wading the whole of them. Two of the bogs were four and six hundred yards wide, and loin-deep; others were mere dips in the country; and at several places water was scarce, having to be obtained for cattle by digging wells. Generally speaking, the water was white and muddy.

The soil was chiefly red clay, which the people of Unyoro use in making the partitions to the houses. In Uganda, the tall reed was used for this purpose; but there were none of these in Unyoro: all the rain that fell was supported by the soil, and on digging a two-feet-deep hole, no water had gone through, and the soil was dry, hard, black, cold, and lifeless in colour, containing 40 to 70 per cent. of clay. The paths, where vegetation had been worn away, were covered with white sand.

The wild vegetation was chiefly of grass, three to four feet high; the Uganda reed had disappeared, and a broad-leaved cane, *Saccharum* sp., also a grass with the head of our oat—a species of *Panicum*—had taken its place. Cattle, sometimes met with in hundreds, grazed over the undulations, which were dotted with acacias, cacti, wild vines, and a few palms; or wild animals, such as antelope, buffalo, zebra, elephant—of which we met with one to two hundred in a herd—grazed in higher pasture and more dense forest, sufficiently tall to hide the smaller of these animals.

Cultivated ground was remarkably rare, the country being chiefly used for grazing cattle; but, where seen, the crops grown were sweet potato, sesamum, pulses, Indian corn, and plantain.

At the capital of Unyoro—the king of which is a demure, undemonstrative, sullen fellow, named Kamarasi—the country is flat and treeless, with a few hills in the horizon. The River Kuffo—formerly in Uganda the “M’werango” and “Moogga Myanza”—flows sluggishly through the plain, in a channel similar to a sunken canal; but in the month of November it was in high flood, tearing down the vegetation of the season in its course, and carrying away landslips bodily—rushes, bushes, and all. This river joins the Nile below Unyoro capital.

The king arranged that we should leave by water, descending the Kuffo without demonstration, so that his people should not be aware of our departure, for he imagined that when we were gone he would be left without protection, but he was mistaken.

We left on the 9th of November, with feelings of unmingled delight at getting away from this inhospitable province. My impatience was great, and I could not help getting angry at our men for taking so long to pack up and be off. As we moved down the Kuffo River, one bank was lined with several

hundred people, one of whom was distinguished as the woman who attended the king during levees, where she sat at his feet. We took a good look at her, and saw she was very plain and flat-featured, with bare head, the wool being combed up in the shape of a cock's comb from the neck to the forehead; the sides of the head were shaved. Her dress was a yellow bark-cloth, striped with black. We shouted good-byes, and waved to the crowds, who returned these salutes very warmly, some of them shouting and running in pace with our canoe along the bank; altogether it was a gala day, for us particularly, though also one for them, for we left Unyoro amidst great demonstrations, and with the hearty good wishes of the king and his followers.

We shot down the Kuffo at the rate of four miles an hour, with four paddlers; but this pace was not continuous—a few rapid strokes were made and then none at all. But we enjoyed it excessively; the stream was broad enough for two ships' "gigs" to have raced abreast; the sides were a sea of tall reeds and papyrus, so that no view could be obtained beyond them, except the occasional top of a tree indicating land.

Having descended a few miles—judging the river to be 150 yards wide—we found it became suddenly lake-like, and this made us look for another river; but our horizon was a complete circle of vegetation, and without a guide it would have been a puzzling predicament. No current was visible now, and in this uncertainty we paddled for an hour; the water in the centre being white, like the Nile water generally, and the sides of a clear brown colour.

On cross-questioning our pilot, we found that we had, imperceptibly to us, reached the Nile, for the boatmen said we had only to ascend the water we were in and we should reach the Victoria Nyanza. In breadth it measured 1000 yards; once, indeed, we had almost a sea horizon. At places where the current tried to make its way amongst myriads of papyrus islands which had stuck in the channel, the surface of the water was much troubled; but where these floating islands had become free, the water had an appearance of stillness, and the islands moved down stream at half a mile per hour.

Some of these floating land-slips, which moved down stream in slow circles, were 20 yards in length, covered with bushes 15 feet high, and a dense under-vegetation. On the day we saw so many, a violent wind blew up-stream, making the foliage in the islands bend to the breeze and appear like rakish-rigged vessels in a storm. In addition to this, hippopotami kept popping up amongst the breakers on the surface of the water, and gave a charming wildness to the scene.

Our boatmen were annoying, for they would not keep upon

the proper course, but went plundering fish at all the traps which were set, or they chased all stray canoes to plunder them. They did not understand our interfering to prevent stealing, and went ashore whenever it suited them. However, at sunset they were always welcome to land, that we might sleep on shore; the landings were generally a channel cut through reeds and rushes for 150 yards. At one of these landings we observed the largest canoe ever seen upon the Nile,—a huge timber, lying water-logged: it was looked on with veneration, for our boatmen sprinkled water over it, and were pleased at our showing the same respect.

The vegetation observed upon a hunting island of considerable extent, belonging to Unyoro and Ukidi, was remarkably tropical, as seen from our canoe on the 10th November. Water-lilies, papyrus, and sword-rush grew in and out of the water, each plant beautiful in itself; amongst these were the curious pith-tree, 30 feet high, covered with yellow flowers larger than its leaves, and quantities of variegated convolvuli. The bank of the island rose abruptly for forty feet, and was covered with trees netted over and drooping from the profusion of cacti, convolvuli, scarlet umbels, mistletoe, showing every contrast of colour—green and orange, scarlet, blue, manve and yellow; but the strangest effect was produced by the cacti, which grew upon the tops of the trees, standing up like stubble in a field.

For four days we travelled in canoes along the stream of the Nile, which maintained its width of one thousand yards and its current of one mile per hour; the banks varied from abrupt to flat, and the floating islands got smaller in size from their perpetually circling like tubs in a pond; occasionally they were seen breaking up in the water, like a flake of snow.

The glare of the sun from the water, the heat and exposure of these few days of paddling, began to tell upon both of us: we suffered from sick-headaches, and at the tenth day from the start of our water-journey, I was struck with severe fever and vomiting, my limbs felt powerless, and I could get no rest at night. The few Zanzibar men (fourteen of them) who had not deserted from us enjoyed the water-route very much, assisting in rowing, splashing, or laughing, and occasionally enjoying the fun of a chase and capture of some stray canoes. This has been already alluded to,—that we permitted the fun, but prohibited all plunder.

We constantly took soundings, and ascertained the depth to be very uniform. In the centre of the stream it measured 18 feet, but, at canoe's length from the side, the smallest measured depth was 9 feet. The river had a firm bottom of sand in its centre, and a soft muddy bottom at its sides.

At 2° S. lat., just above the double-coned hill of "Kikoon-

gooroo," meaning "near the water you get fever," the river gets narrower, 600 yards wide, and abreast of this hill the stream is driven off its regular course and flows to the left, making a majestic sweep, and striking upon high land with many dwellings. This hill, and all the right bank, is here densely wooded and very pretty; it stands 600 to 800 feet above the river's edge. We had seen hippopotami in the river daily, and when resting in the villages on the left bank, every night observed that the people keep apparatus of spears, tackles, and floats for capturing them.

Descending the Nile from "Kikoongooroo" Hill, the river changes from 600 to a minimum width of 200 yards, and its depth is now less, being 9 and 15 feet deep at its edges and centre. The flow was but half a mile an hour, and the bends more frequent, since its width has been narrowed by a more hilly country, though reaches of 2 and 3 miles are still met with. The water was of a darker colour, having been cleared of much sediment; and on the occasion of a storm of wind and rain from the north on the 16th November, 1862, from having the appearance of a sheet of glass, its surface was broken up by a series of breakers and "white horses" running up stream. Later in the day this storm returned to us from the south,—the opposite direction.

Hence, say $2^{\circ} 10' N.$ lat., below Koki, in Chopeh district, the river begins to pass over barriers of rock, the strata of which cross the river, so that boating was impracticable; and we proceeded, after attempting a canoe-journey, for 20 miles by land through an undulating forest-country, with habitations every mile or so, and four to five bogs at the middle part of the journey. This, the left bank of the Nile, was unusually populous, and had immense fields of the sesamum or oil-producing grain, which was about to ripen (19th November).

Arriving at the falls of Karuma, from a height of 100 feet I looked down upon a cataract in the Nile: after passing through the dreary wastes and bogs of Unyoro, this was a cheering and noble sight. The opposite bank sloped away from the river, and was rocky and densely wooded. The dark black water, agitated into violence and floating foam from having passed down a narrow fall, eddied, swirling about like one of our wildest Scottish rivers; but a better idea of this spot was had by sitting on the rocks by the side of the fall. The whole stream of the Nile poured down through three sluices of rock, and then dashed upon islands till its force was exhausted, then it became comparatively still at the point where we were to ferry it—the Karuma Ferry—and proceeded onwards on a new course, to the west.

This cataract is but one of many upon the Nile about this lati-

tude; for above this we observed two others, and below it we heard the rumbling sound of one which must be much larger. But it was not advisable, we were told, to see it, as the Wakidi and the rebel brother of Kamarasi lived not far away. In the entire course of the Nile there is not a more picturesque part than this—the grand river tumbling over rocks, the beautiful wooded banks, the deep channel through which it passes, all are wild to a degree, and we inclined to linger by its course.

Here we had to wait for a day or two before crossing to the opposite bank, and we fished the river or watched the traps set for hippopotami; at last, however, we ordered our twenty cattle to be crossed over before ourselves. African like, this plan was reversed, and we crossed in the first canoe. It was nervous work, for the river was of great depth; it boiled as large streams do, and the canoe had a hole in it, stopped up with a sod. Three paddlers worked hard with swift strokes, and took us safely across the 100 yards, and we alighted upon rocks shaded by trees. Here we boiled for the altitude with two thermometers, the result of which was doubtful, namely 2970? made afterwards 3996 feet by Sir Samuel Baker.

At this spot the natives sacrificed a goat by splitting it up and placing it upon the path, the head to the north; and Speke was asked to step across it: another had been killed in the same way upon the left bank, for the same object of making our journey propitious.

Late in the afternoon, having ferried the river, we were told that our cattle could not be crossed unless we made some additional present; some beef must be eaten before the risk is run: a cow settled the matter, and the business proceeded. Four were led across at one time by ropes fastened to the canoe: the rope was tied round the lower jaw of the hornless ones, and round the horns of the horned. One only broke loose, but it was picked up before reaching the next cataract; and when all was over, we felt thankful, as the current was dangerous.

After the fatigue and continued anxiety of the day—for we were anxious about our provisions for the journey north, and because we now had entered an enemy's country—we were doomed to be disturbed in our rest at night in the wild forest. A violent burst of thunder and lightning with strong wind threatened to root up the trees under which we camped, and ruin fell in torrents (23rd November), soaking everything. In the midst of the din, some voices called out that our precious cattle had strayed, but happily they were recovered; we spent a wakeful night, shivering in the cold under wet blankets and listening to the creaking of the trees and the sounds of wild

animals, but next day by noon our guides arrived, our things were partially dried, and we were off on the march all merry again.

Taking leave of all the men of Unyoro who had kindly escorted us thus far, after they had performed a war dance in our honour, we placed ourselves in charge of Chopeh guides, who were to introduce us to the next chief upon the route, namely, to the old Sultan of Gani, a small province 150 miles from Gondokoro.

At Karuma Falls we had seen the Nile change its course from a northerly to a westerly direction, flowing down through wild scenery,—amongst rocks, ravines, rapids and reaches, the banks reminding me of the varied foliage on our river-banks of Scotland; while the pure waters, plunging amongst these rocks, passed rapidly on to the Albert Nyanza, where they were again to become polluted and made white by the swamps of that region. With such varied aspect of country we found a rich flora during November; and the three following months, when we were in Gani, a district of woods and rocky rivulets, we made a considerable addition to our collection of new plants.

When at the capitals of Karagweh, Uganda, and Unyoro, from native information, we had laid down the position and extent of the Albert Nyanza; and so accurate was this, that when Sir Samuel Baker visited it, he found that the map we had given him was within a few miles of being correct at the most northerly point he reached; but whether our southern outline be correct remains to be proved, for hitherto no one has explored it.

The altitude of the river at Karuma, and that taken of it nine marches farther north, showed a difference of 1000 feet of fall in this short distance; this was conclusive that cataracts existed, and it has been proved by Sir Samuel Baker that this indication, shown by our boiling thermometers, was correct—that several falls and one great one, the “Murchison Falls,” exist here upon this bend of the Nile.

We had heard, when at Unyoro, much concerning the Albert Nyanza; that the Keevero live upon its north-west shore, never cultivate, nor care for anything—man or woman,—their sole occupation and thought being to make the only *white* salt in the country. The mountains on the western shore of the lake were so steep that people must sit down in descending them. A race called the *Wakaga* lived opposite the Keevero. But though told this and many other particulars about the “stones” in the river (meaning cataracts) which prevented boats travelling from Unyoro by water to Lutanzige, we could not get permission to visit it. All was arranged that I should explore this lake; but no inducement would make Kamarasi yield; he was a

miserable, timid, suspicious creature: but I am delighted to think that Baker was allowed to visit it, and hope we shall soon hear that he has explored its farthest extremity and its utmost windings.

Proceeding from Karuma almost due north fifteen marches, never once seeing the Nile, but ascertaining daily how far it was to our left, we again saw it at Paira. We had crossed a few hill-spurs, some streams, bogs, and plateaus; the latter covered with grass the height of ourselves—in fact, we had traversed one of the finest natural positions for large game that can be imagined. The Nile makes a half-circle round it, and our route was the diameter over ups and downs, grass, glade and forest. The most perfect retreat for elephant and buffalo, which were numerous here.

The Nile at Paira was a noble stream, flowing placidly along a reach without a rock and with level banks. A mile or so below this, it is joined by several small streams from the east, and then sweeps round the base of the mountain "Jubl Kookoo," called by M. Miani "Guiri." Here the rocks from the mountain bar the even flow of the stream, the tumbling of the water over many barriers and in passing islands may be heard from some distance. Standing on the rocky shore the river cascaded and foamed for a quarter of a mile or more, carrying reeds, roots, logs, and débris along its wild course,—so wild that no boat could live a moment in it. This was only half of the river, the other branch was concealed by a wooded island opposite us; just the place that elephants would delight in—quiet seclusion with plenty of water and cover.

Here, in the eddies of the river, large fish showed their backs, looking like porpoises in the water; but, though the bank was strewn with large round scales and débris of ashes where natives had been cooking, we had not the art of getting any fish, but, during a halt, we drank of the water and spoke to it in the language of Uganda as an old friend. Its taste was nothing to remark upon.

We inspected the tamarind-tree on the right bank, upon which the Venetian traveller had cut his name, to show the farthest point he had reached from Egypt; the letters "Miani" had been defaced by the growth of bark, and nails had been extracted, but there was no doubt that they were made by this enterprising traveller, M. Giovanni Miani, for, on reaching Gondokoro, we ascertained his name.

Jubl Kookoo is a straight range of bleak, barren, escarped rock, 2000 feet higher than the river, which flows for, say, 60 miles in a N.N.W. direction along its eastern base, in a vast gorge. The right bank is only 200 to 300 feet above

the river, and consists of cones, scantily wooded. The lower ground by the river's edge has many varieties of trees, amongst which there are beautiful sites for houses.

At 3½ n. lat. the River Asua joins the right bank of the Nile. We had been told that it was so boisterous we could only cross it at certain seasons, and I can believe this; but we were disappointed on reaching it (1st February) to find that we had only to take our trousers off and walk across it. Its sides were marked by deposits of sand and débris, showing that it floods rapidly the steep narrow channel of its bed of rock; but now it was only a rivulet, with a strong current in its centre. We drank its water, which was insipid and not clear; indicating that it came from a marsh or low country, and was not the accumulations from the hill-sides alone. Speke understood that its rise was in the Masai country; whether correct or not, or whether from Uuyoro, we have yet to know its source, though it is of little consequence where it comes from, as it adds but a very small current of water to the Nile.

The Jubl Kookoo range is a most interesting tract of country to the geologist, for the strata are seen in one view towering above the bed of the river for 2000 feet. In no portion of Africa had we met with so magnificent an exposure of rock in regular layers. The faces of these crags are barren and steep, marked in perpendicular lines from above by the washing away of the softer parts. At one point there are three distinct terraces; the skyline of the highest corresponds exactly with, or is parallel to, the waving outlines of the two lower terraces, indicating that the strata of the whole are continuous, if not similar.

We could not cross the river, to examine the rocks more closely, as we had no boats and the inhabitants were unknown to us; but, as no European has ever explored this grand mass of mountain, it would certainly yield a rich reward to either geologist, naturalist, or botanist.

On the bank by which we travelled—the right—the country was comparatively flat; the conical hills upon it formed the right side of the vista, and were not above 300 feet high, but we were much interested in the exposed rock, strewn on the route in sharp fragments. The layers of rock were thrown up so vertically that their dip could only be suggested by looking at the mountain across the river. Their stratifications were slaty blue, broken into squares or oblong fragments, like slate-cleavage and mixed with veins of quartz.

The chasm in which the Nile flows past Jubl Kookoo for 50 miles in a straight line looks as if, by a marvellous effort of Nature, a gigantic mine had burst from the depths of the earth, and upheaved, to the left, stratified rock to a height of 2000 feet.

On the 7th of February we left the Nile, proceeding across country in a northerly direction for 60 miles in six stages. In doing so the Bari inhabitants were, I was sorry to see, hostile to our party of Egyptians, whom we had joined at Faloro. We had to proceed in a compact column, well armed and prepared for an attack, for these traders were the terror of the inhabitants, plundering them of their ivory, their cattle, and children; but we got through without much molestation. One night the natives set fire to the grass round our camp, danced, yelled, and drummed by the light of the flames which encroached upon us, and we thought it time to look for the safety of our maps and journals, sitting the whole night watching for an attack, with our rifles by us; but the fear of an occasional shot kept them at bay, and happy were we when day broke: we could breathe more freely. I may remark that this was the only night of our journey that I had ever spent in fear, and that I kept my clothes on ready for action; and it is too disgraceful that this state of things has been brought about by comparatively civilized people,—the employés of the Khartoom traders; it does not exist on the East Coast of Africa, as far as our experience goes.

After leaving the River Asua, the route is across undulations covered with brushwood, low grass, and occasional forests. The watercourses were almost dry, and on one occasion we had to make a march under a hot sun for 12 miles without water. There were few villages till reaching the Bari territory, where the population was large, and the aspect of the land changed into long undulations, cut up by streams with rocky sides, and flowing to the west. Many parts reminded us, from being lawn-like and dotted with single shady trees, that we looked on an English park; but the trees were tamarinds, butter-trees, cacti, &c., and rocky heights, chiefly igneous, occasionally broke the spell.

As I have mentioned, we had been marching through a hostile country with great caution; but when no precaution was necessary, as we approached Gondokoro, our caravan broke into stragglers, all were straining eagerly to reach it, and my excitement became still greater when its distant outline was pointed out.

But how changed all around us looked! We plodded now over an ugly dreary plain of sand, sometimes firm, but at other times heavy. In the far distance a white speck appeared, a house, a tent. Getting nearer to Gondokoro, we could scarcely believe our eyes; there were masts of boats, actually. What delight, what excitement! Our escort of Nubians formed line when within a mile of arrival, blazed their guns, loaded with bullets,

in a childish, dangerous manner, beat their drums and fifes, and led us in triumph to the tent of a Circassian. This did not satisfy us; so off we went in search of one more akin to us, and met a sturdy white face. Baker advanced, and we felt inclined to embrace him. Oh the happy moment! the relief it was to us, finding that our maps, journals, and collections were now safe.

The Nile, on the 15th day of February, 1863, at Gondokoro, may be described. At this season it was at low water, or, if anything, an increase had commenced as noted by Dr. Murie; but where was the flooded Nile we had seen at Unyoro in November? It had not reached Gondokoro yet; and we concluded that this flood had spread itself over the vast swamps in Unyoro, and was filling up the Albert Nyanza Lake, which would overflow and discharge its waters later; probably by March it would reach Gondokoro. Where else could the brim-full river of Unyoro have gone to?

The right bank of the Nile here is generally in two stair-like steps, the highest 19 feet above water-level, and the other, and lower step, 4 feet above water. Sometimes these two steps merge into one bank, or they may be many yards apart. The river is divided by an island upon which the traders place their cattle for safety; these they barter for ivory. The right branch is 150 yards wide, with an average flow of 3 miles per hour. The usual lake-débris discolours it, makes it white mud-colour, which renders it almost necessary to be filtered before drinking. The higher, or old bank, recedes in a flat to the horizon, with the true Egyptian character, which is very uninteresting after having seen the Nile country farther south. There are a few low solitary hills in the north-west, south-west, and south, as laid down on maps.

At Gondokoro I was much surprised to see the fearless way the natives constantly swim across the river, regardless of crocodiles. They only took the precaution of swimming in sets of three or four, with either an earthen jar or a log of pith-wood as their float, or, if they had to convey the carcase of an ox from one bank to another, they used no boat whatever; still the meat was brought over perfectly dry. The reader will wonder how this could possibly be done: the reply is, it was done by putting all the meat into its own skin, inflating it, tying it up at all open parts and swimming across with it. Their mode of swimming is by stretching out the arms alternately out of the water; this seems to be as expeditious or expert a mode as ours, and, while moving along, they frighten the hippopotami and crocodiles by shouting, "Oow-ow!"

At night, while camped on the Nile at Gondokoro, the

sounds were either the hippopotamus or the rifle, the one much more pleasant than the other; the horny trumpeting of the former reverberating either up or down stream was delicious music to the ear, but the crack of rifles only made me dread that some poor native had fallen its victim; for, while at Gondokoro, I saw no law or government.

While here, we saw three boats arrive from Cairo belonging to a respectable Syrian trader. They had sailed on or about the 15th November, and came up the Nile with the north wind in three months, bringing Baker news of the 1st of November from England. We may therefore calculate, from this single recorded instance, that the time to leave Cairo for Gondokoro by country boat is the 15th November. The down-voyage for same distance may be best seen in the Table which follows; which shows that, with the help of a steamer for six days, and camels for fifteen days, we took two months and five days between Gondokoro and Cairo.

This seems a long time; but we must remember the delays consequent upon calms, unnecessary delays of boatmen, the slow journey of fifteen days, with camels going but two miles per hour, and when railways extend to Khartoom and steam-boats carry the passengers hence to Gondokoro, when pilots are appointed who know every rock, shoal, branch, and channel of the river, we shall be able to accomplish the distance in twenty-five days with ease, and be quite independent of the present laid down season of "North" and "South" wind travelling.

Time taken on our Route from Gondokoro to Cairo, with Dates.

	Days.
Gondokoro, by "diabecah," to Khartoom, 26th February	32
to 30th March, 1863	
Khartoom, ditto Berber, 15th April to 23rd	8
April	
Berber, by camels, to Korosko, 27th April to 12th May ..	15
Korosko, by diabecah, namely, country boat to Philæ,	4
7 p.m., 12th to 16th May	
From Aswan to Cairo, by Viceroy's steamboat (specially	6
dispatched for us), a.m., 19th May to 25th May	
Total	65

The remaining portion of our journey down the Nile to Abou-Ahmed, with the winds, seasons, &c., may be seen best in the following Table:—

THE NILE FROM GONDOKORO TO KHARTOUM, KHARTOUM TO BEVER, BEVER TO ABOO ANNEH.

Date.	Approximate Lat.: Name and Nature of the Banks of Nile.	The Nile, its Width, Current, &c.	Course.	Time Moving.	Distance Made.	How Calmed.	Wind.	Remarks.
1867. Feb. 26	2°10' N. lat. Banks flat to horizon, forest trees covered with creepers.	2 to 200 yards wide; boats struck once.	N.	Hours. 4	Miles. 16	Sail and row.	P.M. South.	
" 27	2°10' to 20' lat. Herri country. Cattle numerous; wood collected.	Ditto, boat struck twice. No lead is ever heaved.	N.W.	12	30	6 to 6 P.M. Row.	North	Head wind most of day.
" 28	2° N. lat. Shyr and Allah. Cultivation and cattle; banks flat and grassy.	The river breaks into four or five channels here, and continues so with a winding course for 10 miles. The Bahir Giraffe is one of these channels.	N.W.	9	20	5 till 12. Row 3 till 6. Row.	"	Anchor all night.
March 1	6°3' lat. Allah people, hospitable; banks flat, cultivated, or covered with forest.	River branch winds very much, and there is no clear space to land; nothing but swamp vegetation.	N.W.	8	32	5 till 2. Row. Halt all day from 2 P.M.	"	Halt at Shenooda's depot from 2 P.M.
" 2	6°45' lat. Biser country, where the Bahir Giraffe leaves the Nile. Had to take in firewood, as there are swamps ahead.	Our branch is eighty yards wide, with trees occasionally.	N.W.	16	40	8 to 10 A.M. Sail.	South, 6 to 10.	Leave ditto 8 A.M. and pull all day and night; our boat was attacked by sticks and spears being thrown into it.
" 3	7°3' lat. At 2 P.M. arrive in Keelen country; swamps filled with insects.	River quite surrounded by swamp vegetation. The Nile has its smallest degree of longitude at this point.	N.W.	12	20	Row.	"	
" 4	7°3' lat. Alshooka, Suddra country. All swamp till 2 P.M. Arrive at the station of De Malac.	The river seems to be again united; it runs in semi-circles north-west to north-east; current one mile per hour.	N.E.	6	36	7½ to 2. Sail.	South till 2 P.M.	Sometimes sailed 6 to 8 miles per hour.
" 5	7°45' lat. Souer country. Peopled on right bank, though no boats seen.	Weeds and rushes floating down, one mile per hour. River so yards wide, and hemmed in by rushes.	N.E.	16	29	Sail and row.	North	Floating down all night.
" 6	8°3' lat. Souer country, no boats visible.	The river-banks are of rushes, so that no view is obtained beyond them from our boat.	N.E.	16	19	Row	Calm all night, calm at noon.	Rowed all last night.
" 7	8°30' lat. Souer country. People, cattle, and goats seen on the left bank.	Banks are now of grass	N.N.E.	16	20	Row.	North	Left bank a plain.

THE NILE FROM GONDOKORO TO KHARTOUM, KHARTOUM TO BERBER, BERBER TO ADOO ANMED—continued.

Date.	Approximate Lat. Name and Nature of the Banks of Nile.	The Nile, its Width, Current, &c.	Course.	Time Moving.	Distance Gained.	How Gained.	Wind.	REMARKS.
1863 Mar. 20	13° lat. A strange sight appears 3 mile from right bank, namely, five hills with vertical strata.	There are rocks in the river, some were white and rounded; washing to cross the river, which is not so wide today. Average width 400 to 500 yards.	N.N.E.	Hours. 24	Miles. 34	.	North, 12 to 3 . .	Sail part of night.
" 21	13°-30 lat. <i>Acacia arabica</i> being felled and built into large boats.		N.N.E.	12	20	Sail and row .	South till 10 A.M., when a gale blew us for safety into an arm of the river till 5 P.M. North from 5 till midnight. South, 4 till 4 P.M.	.
" 22	13½ lat. 10 A.M., village of Hais on right bank. Immense herds of camels and cattle on the right bank—now populous.	Right bank is of drifted sand, which shelves in under scaccia. River 500 yards wide.	..	19	24	Sail and row .	Unfavourable.	No wind during the heat.
" 23	13½ lat. Trees and cultivation; people industrious. Five hills of Arakole seen on left bank.	River one mile wide, islands numerous and cultivated.	..	16	30	Row . . .		
" 24	14° lat. Shells. Banks cultivated. Right bank is of sand drifted here by the periodical north wind.	. . .	N.	14	12	Row, sail and low.	North and N.N.W. from 7 to 11, and flat at Shualal 11 till 6 P.M., during fearful heat.	Pass five to six sailing boats daily now.
" 25	14°-25 lat. 5 A.M. Al-aga on left bank. Herlocks of sand cover the alluvial of right bank.	River one mile wide, full of shoals and breakers coming down stream; banks flat with few trees.	N. & N.E.	9	10	Tacking and rowing till midnight.	North	Reckless head wind from 5 A.M. till 3.
" 26	14½ lat. Gutenna. Left bank flat and cultivated. Sand hills of sand a perpendicular wall of alluvial on the right bank.	The navigation yesterday and today is very difficult, as the river is much exposed here to storms from the north.	..	4	8	Tacking . .	North	Reckless head wind makes us move to all day.
" 27	14½ lat. The ancient river bank on the right there is a perpendicular wall, there is verdure up to the foot of it.	Irrigation was observed here by the Persian wheel; not observed before upon the Nile.	..	..	7	. . . .	North	Cotton cultivations.
" 28	15° lat. Right bank is still of rolling hills of sand. 9 P.M. opposite Juhl Mesa on left bank; 11 P.M. opposite Juhl Brame.	Little or no current, 1200 yards wide, Shoola.	N.N.E.	..	10	. . . .	North.	

.. 29	15°-25 lat. 64 A.M. the solitary hill of "Jubi Aoke" 4 mile from right bank. No longer aad billocks, the right bank is green and shaded by acacias.	A spur of rock runs in a north-west direction across the river from Jubi Aoke. Island of Marda is 5 miles north of Aoke. Some distant undulations visible on the left bank. Channel low aboaly.	N.	17	12 (4 + 6 + 8).	Row, sail, and tow.	North, 1 to 5 P.M.	Deep water at Shier Niagara.
.. 30	15°-30 lat. 6 A.M. Kharoom surrounded by date palms; banks flat and bare. From the junction of the two Niles, there are detached hills visible a few miles away on left bank to north-west.	The Nile is in two branches where it joins the little Nile; we descended the left channel, which has a sunken rock in its right centre; our current was a rapid of dirty water, the Blue Nile sparkled and had scarcely any flow. We poled up it for 4 mile and anchored at Kharoom, on the left bank of the Blue Nile.	N.	4	2 to 5.	Row and pole.		
Apr. 15	From Kharoom by boat to Mah-Lya, lat. 15°-15 on right bank.	.	..	?	..	Row.		
.. 16	16° lat. Banks sandy and of perpendicular clay, covered with "Jow" jungle. Took in a pilot.	One hippopotamus seen. Nile mud coloured as usual, sometimes only 180 yards wide; but at 5 P.M. look down it for 4 miles and see countless rocks in the channel. Mount Kooeyan and a chain of low hills to its right.	N.	All day	..	Row	No wind	Boat had to be rowed fast through the rocky channel.
.. 17	16°-30 lat. To Kurnat, pass to the left of the island of Kooeyan, lat. 16° 12, and keep between low hills of splintered rock.	Filter divides below Mount Kooeyan. Channel dangerous and narrow in places; we took the right channel of three.	N.E.	..	..	Row.	..	Anchor all night.
.. 24	Sullaash. Banks flat and tame; bare and there low hills barren; camels numerous on banks.	Not many rocks in the channel today.	E.N.E.	..	..	Row	North	9 till 2 a storm from north, with sand, made us anchor.
.. 25	16°-41 lat. M'tama. Persian wells on the banks, cotton, flocks; left bank steep.	Filter without rocks today.	E.N.E.	13	..	Row from 5 till 3, and 4 till 7.		
.. 28	M'hakutap, passing Schenda on right bank.	River had no rocks, but at 7 P.M. our captain struck work, fearing to pass rocks in front as it was too dark to move.	E.N.E.	..	..	Row from 4 till 7.	North	From 7 A.M. till 4 a suffocating hot wind from north, with dust stops us.

THE NILE FROM GONDOKORO TO KHARTOUM, KHARTOUM TO BERBER, BERBER TO ADOK AHMED--continued.

Dates.	Approximate Lat. : Name and Nature of the Banks of Nile.	The Nile, its Width, Current, &c.	Course.	Time Moving.	Distance (Miles).	How Gained.	Wind.	Remarks.
1843 Aug. 21	16°-55 lat. Merces. Shore is hard and flat, strewn with curiously shaped, lustreless, heavy, knolls of clay. Slept all last night upon the sand of the shore as the planks of our boat are so hard.	6 a.m. one speck of a rock at the end of a sand shoal. Late palms well irrigated on left bank. Little current; width 300 yards.	N.E.	..	..	Row 64 till 114, and 64 till 10 p.m.	North, at 11 a.m. .	2 p.m. visit pyramids and spinisee 2 miles from river bank. There are 3 sets of pyramids all stone-faced and the 3 spinisee are of blue stratified rock.
.. 22	Above River Athara, passing Damour on right bank; Agaba on left bank. Splinters of flint about. Trade of salt, ropes, earthenware, baskets lie for export to Khartoum, opposite town of Hamur.	To-night we slept upon the sandy shore of the right bank, quarter of a mile above River Athara, lat. 17° 40'.	..	..	..	Row . . .	Calm.	
.. 23	17°-53 lat. Berber, where we halt, procuring camels, 21-27.	River Athara joined at a right angle our right bank, its water now is 55 yards wide, no stream evident; from bank to bank it is 120 yards across. It joins with the same kind of sweep as the Blue Nile, and its banks are of steep mud. Nile has a course over rock for 2 miles below the junction of the Athara; they are now 1 to 3 feet above water.	..	..	..	Row . . .	North, ? till noon.	
.. 27	March with camels from Berber to El Khore. Footing hard and firm.	. . .	..	2	6	Walk . . .	North . . .	Disagreeable wind p.m.
.. 29	16°-16 lat. March to Gisenet'ah along right bank; road lies a gravel walk, with few bushes, acacias, palms, and cyprus-bias.	Eight bank high, a ferry at El Abdey. Island at Gisenet'ah.	..	..	16	Walk		

FLORA AND FAUNA.

The following is an account of the Flora, with a list of the invertebrate and vertebrate animals either collected or observed by us, with notes upon the several objects. The scientific names have been supplied, with the kind aid of the authorities who are mentioned in their proper places, or they have been copied from the Transactions of different Societies.

The lists comprise as follows:—

Plants collected	861
Specimens of insects	202
Species of land and freshwater shells	27
Species of marine shells	85
Fresh water fish	11
Snakes	12
Lizards, &c.	8
Tortoises	3
Birds	140
Mammals	75
Total	1514

FLORA.—Plants were collected throughout the journey, commencing at places on the voyage out, and ending with Egyptian territory at 25° N. lat., but we had little facility for carrying our collections; having neither horses, carts, nor camels, all had to be carried by native porters.

	Species.
Rio Janeiro plants	24
Delagoa Bay, ditto	22
Europa Island, ditto	15
Johanna Island, ditto	24
Zanzibar Island, ditto	15
African plants from 7° S. lat. to 25° N. lat.	761
	861

The above were deposited in the Royal Herbarium at Kew. A list of the African plants, prepared by Dr. T. Thomson, appeared in the Appendix to Speke's 'Journal of the Discovery of the Source of the Nile;' they have been noticed or described by Professor D. Oliver in the 'African Flora,' and need not be enumerated here, as the whole collection of the "Speke and Grant Expedition," with one hundred illustrations by Fitch, of the new and rare species, forms the twenty-ninth volume of the 'Linnean Society's Transactions,' a copy of which has been presented to this Society.

INVERTEBRATE ANIMALS.—*Corals*.—Zanzibar, and the other Islands which are seen from it, are formations made by coral-polypes upon volcanic rock: they look, when seen from a dis-

tance, like great arks upon the sea; this effect being produced by a dense tree-vegetation, which is only 10 to 50 feet above the level of the sea. Blocks of coral are quarried by the natives, and form the material for building houses. Upon this formation there is a stratum of red pulverized clay resembling what was observed upon the island of Johanna farther south. Through this friable clay, wells are dug to a depth of 40 feet; but the people also depend upon a hot spring—too hot to drink—for their water-supply.

Coral may be best seen from a boat, growing, or rather being formed, in great beauty, in the bottom of the sea. Two species were collected: the white *Seriatipora lineata*, and the deep crimson "Organ coral," *Tubipora musica*.

Tape worm. *Tænia solium* (?)—Our followers suffered very much from this parasite, having little or no vegetable food during the journey. The segments came away from them at all times; and we had no remedy, though a decoction from the root of a shrub with straight thorns, found in Karagweh, and resembling a Balsamodeudron, was resorted to.

Intestine worms.—The paunches of Burchell's zebra were found to be full of bunches of entozoa adhering to the coats of the stomachs.

Leeches were comparatively scarce, not being numerous, as they are in the lower ranges of the Himalayas, where, during the rains, they penetrate the socks and adhere to the limbs of any one walking through long grass.

Earth worms we used as bait when fishing, and had no difficulty in finding them where there was moisture.

Wood-lice, land crabs, spiders, scorpions, centipedes, and other such, were all observed; also, near the coast, the curious black horny-skinned *Iulus* with its many small feet, and 3 to 4 inch long body. Bird and beast parasites, cicadas, land bugs, grasshoppers, locusts, crickets, termites, fleas, flies, fire-flies, gnats, caterpillars, butterflies, moths, ants, wasps, bees, beetles, weevils, and glowworms, were of various species, a few of which will be hereafter mentioned, though some may be specially noted now.

Bugs.—Very numerous, particularly in deserted villages; they come out to eat at dusk and get inside the clothes, but we never found that their bite created annoying inflammation, probably because our blood had been seasoned by ten years of an Indian climate. For this reason, new-comers in hot countries are always more tried by such biting insects, and an explorer should certainly be acclimatised.

Locusts.—This insect was frequently met with, but never in the form of a plague clouding the skies as seen in the Hima-

laya ranges. We were told that Unyanyembe, in 5° S. lat., was stricken with them for ten successive years, but whether it will be again visited after the period of hatching—said to be 17 years—remains to be seen. Those seen, brought in as food by the people of Uganda at the equator, 25th April, 1862, were 1 inch long, with the hinder legs similar to those of grasshoppers, 2 pairs of wings, antennæ $1\frac{1}{2}$ inch long, close to the eyes, and not much coloured about their bodies or wings. I have seen our men frizzling the legs of this insect, and eating them with great relish.

White ants.—In certain localities, such as a few marches from the sea-coast, to the north of the River Kitangule, and in Unyoro and Ukidi, their formations were abundant, some of them 50 yards in circumference of base. The people eat them with avidity, catching them in a simple manner by placing a wicker-frame over their mounds; under this frame an earthen jar is laid, so that when the winged ones take flight they must fall into the jar, whence they cannot rise; a bark-cloth is placed upon the wicker during the seasons these insects are swarming, so that all the young and delicate ones may be caught for food.

Flies were not such pests as fleas and *mosquitos*, which swarmed all along the route. At Karagweh the long-legged grey mosquitos keep one's legs in perpetual motion, biting mostly in the evening, through socks and trousers. Netting is absolutely necessary to secure rest at night in Uganda and on the Nile, when the vegetation of the banks may be of rushes.

Caterpillars and butterflies. The largest caterpillar observed was on the 11th December, 1862, in Madi. It was very handsome, 3 inches long, black-bodied, with 12 rows of white, thorn-like spines across its body from head to foot. It was feeding upon the leaves of the *Crossopteryx febrifuga*. We were informed that the people of Heeno eat this species as well as other kinds of caterpillar. On the 26th January, 1861, at Kazeh, we observed that the young rice-crop was being eaten by a small caterpillar called "doodoo," with black body and green belly; it destroys whole fields, and the people have to pick them off and destroy them to save their crops, or they allow the "Locust bird" of the Cape to fatten upon them. As far as we observed, Africa on the equator is not a country favoured by many species of butterflies or of birds; the vegetation has too much sameness about it. There are remarkably few species. In Ugogo, during December, after the first fall of rain, one species came out with the sun in considerable numbers, flitting over the pools of water. They were small, either yellow or white, with a few spots of black upon their wings.

Ants.—There were many species seen, but the most vicious was a red insect called the "Seeafoo," observed in Zanzibar Island and in the interior. The natives warn one not to walk where it is, as the sting is severe. At Ukuni, for several successive nights, I was disturbed by the noise of some calves in the hut where I slept; by-and-by I was attacked by ants pulling at my whole body, and only got rid of them by surrounding my iron bedstead with live charcoal. The house was still infested by them; the natives, therefore, put a flock of one hundred goats into the hut for several nights, and this fairly stamped out this pest of "Seeafoo" ants. They were small and black, but amongst them there were some monster black ones.

Sand wasps, or burrowing Hymenoptera.—On the 22nd January, 1863, while digging sand on the bank of a stream, a swarm of these surrounded me. Their abdomens were yellow, and also green, with bars across, wings four, feet six, hind ones flattened, they could sting upwards and ordinary ways; their habit was to burrow for six inches, deposit a cocoon made of the leaves of a tree, *Stereospermum* sp., now in blossom, and place within it a yellow watery substance, which smelt unpleasantly, and had but the faintest taste of honey or wax. The natives said truly that this substance is transported by the bees to their real nests as food for the young; but the curious circumstance about this insect is that these cocoons are almost immersed in water, though covered with sand.

Bees.—The hive-bee, or one similar, was seen along our whole route, where the people frequently kept them in hives made of bark. They were first observed on the beautifully wild island of Johanna upon the east coast. Here, on the 14th August, we came on the hive-bee in the slit of a tree; and, of four specimens, thought them smaller and more game-looking than our home kind. In Unyamwezi honey was more plentiful than in any portion of our route. We purchased it for old cotton-bags, or for American sheeting, obtaining 34 lbs. weight for 3 yards. The honey was unstrained, white, or rich red, varying in flavour according to the flowers it had been gathered from; that gathered from species of *Bassia* and *Zygia* is esteemed. The season, at 5° S. lat., for making new hives and for collecting swarms is June, when the villagers make hives from the bark of a tree, namely, a cylinder—a yard long, and closed at both ends, except an aperture—is held together by wooden spikes, and then placed, for swarms to go to, in the fork of a tree with the bark outside. Beeswax is unknown as an article of trade to the natives.

LIST OF INSECTS, &c. (from the 'Proceedings of the Zoological Society of London,' March 8th, 1864) collected by Captain SPEKE during the EAST AFRICAN EXPEDITION. By FREDERICK SMITH. Revised to this date by Mr. WATERHOUSE, British Museum.

COLEOPTERA—GEODETHAGA.

Anthia striatopunctata. Guer.
Polyhirma polioluma. Chaud.
Scarites procerus. Klug.

HYDRADETHAGA.

Dineutes Africanus. Aub.

LAMELLICORNIA.

Rhizotrogus —?

(This must be a mistake. I find no *Rhizotrogus* in the collection. It should be "*Anemola*" sp.? of which there are two specimens from Captain Speke's collection. W.)

Gymnopleurus profanus. Latr.
Trox Natalensis. Bohem.

HETEROMERA.

Adesmia intricata. Klug.

Stenocara sp.

New genus? near *Tentyria*.

Phrynosodus —.

Anomalopus sp.

Epicaula gigas. Westw.

RHYNCHOTHOIRA.

Cleonus —.

LONGICORNIA.

Purpuricenus, new sp.

HYMENOPTERA.

Formica longipes. Gerst.

Ponera pestilens. Smith.

Dorylus hecotelus. Linn.

Mutilla Guineensis. Fabr.

Mutilla bilunata. Gerst.

The collection made over to the Museum consisted of two hundred and ninety-two specimens, namely:—

146 Coleoptera,
29 Orthoptera,
29 Hemiptera,
6 Homoptera,

26 Diptera,
46 Hymenoptera,
4 Termes,
2 Myrmeleon.

And of this number, only the above forty-one have been named as yet.

Dr. H. Dohrn, who examined our Nile shells, writes: "We learn that up from the mouth of the Nile to the Victoria Nyanza, at a distance of more than 32° of lat., we meet with exactly the same species." (*Vide* 'Proceedings of the Zoological Society,' 8th March, 1864.)

FOSSILES.

Ammophila —?

DIPTERA.

Deria (new subgenus).

Asilus —?

Bengulia —?

Chrysomyia elura.

Tabanus —?

ORTHOPTERA.

Empusa —.

Phymateus squarrosus.

Cyrtacanthacris flavescens. Walker.

Heterodes Servillei. Reich.

Akicera punctosa. Walker.

Akicera femoralis. Walker.

Gryllotalpa Africana. Pal Beur.

Gryllus Capensis. Fabr.

Pamphagus apicalis. Walker.

Periplaneta fusca. Walker.

NEUROPTERA.

Myrmeleon —.

Termes bellicosus. Sm.

HEMIPTERA.

Polymerus —.

Odantopus serpunctatus.

Dysdercus albicollis.

(End of Insecta.)

MYRIAPODA.

Spiridolus pulchellus.

Eurypleurus orygonus. Peters.

Ixodus, 2 species.

Spirostreptus gigas. Peters.

ARACHNIDA.

Mygale sp.?

Victoria Nyanza and Albert Shells.—The shells marked by a cross were collected in undoubted Nile-land, and it is interesting to remark upon them that only one of fifteen species was found in a region unconnected with the Nile, and then it (*Paludina bulimoides*) was called by Dohrn the only North African, or Nile species in the collection from Nyassa.

Tanganika shells.—The four species collected in this lake do not appear in the lists from the other four localities, which indicates a distinct and separate region.

Nyassa shells.—Twenty of Dr. Kirk's species are different from the shells of Nile-land and Tanganika; but six of his shells were found on the east coast of Africa by Captain Speke.

Mombas and Seychelle.—*Physoptis Africana* is common to Lake Nyassa, and was mixed up with Captain Speke's Nilotic shells. *Melania tuberculata* is found in all the regions except Tanganika. The others in the list are all different from those in the other regions.

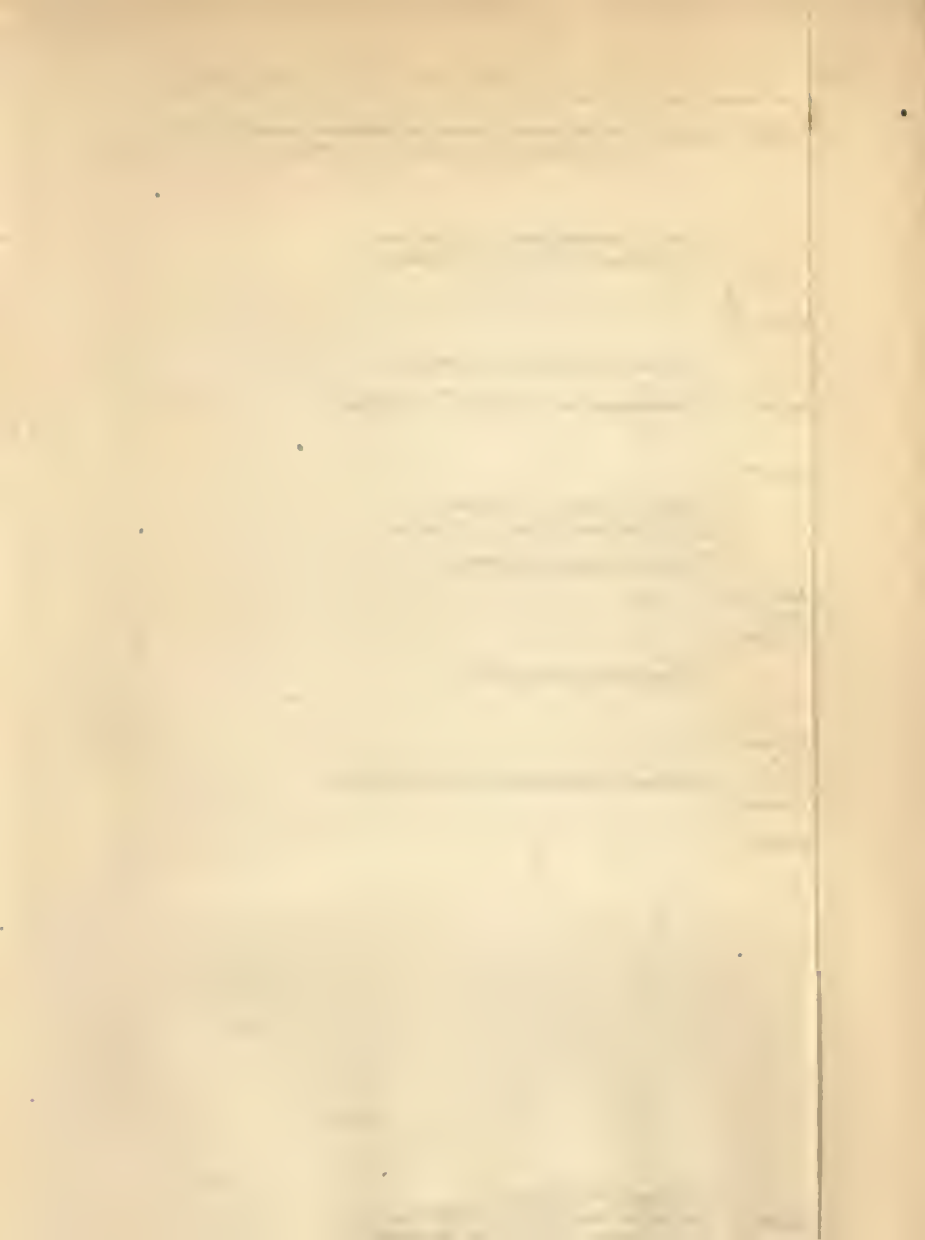
A correspondent and naturalist, Mr. A. Cruickshank of Aberdeen, has examined these lists of shells, and writes:—"I have compared the four lists of shells in the Table you sent. Each list has evidently a faeies distinct from the others. There are few species common to any two of the lists, and still fewer common to all four. This alone would seem to show that each list of species indicates a distinct basin; and doubtless a similar inference might be drawn from the mammals, birds, reptiles, freshwater fishes and insects of the same several basins."

ALPHABETICAL LIST of MARINE SHELLS purchased from a Dealer or gathered at ZANZIBAR by me, and named by Mr. SMITH, British Museum.

NAME.	Habitat as noted upon the same Species in the British Museum.
<i>Achalina reticulata</i> . Pfeiffer	Africa.
<i>Anolacia torosa</i> . Meusch	Mozambique.
<i>Atya Naucum</i> . Linnæus	No locality.
.. <i>cylindrica</i> . Chemnitz	No locality.
<i>Bulla ampulla</i> . Linnæus	Britain? Isle of France.
<i>Cardium lyratum</i> . Sowerby	{ Isle of Negros, one of the Philippines, lat. 10 N.; long. 122 E.
.. <i>pseudo-lima</i> . Lamk.	No locality.
.. <i>enode</i> . Sowerby	Ceylon.
.. <i>hemicardium</i> . Linnæus	{ Indian Ocean, Isle of Zebu, one of the Philippines.
<i>Cassis torquata</i> . Reeve	New Holland.
<i>Cerithium Kochii</i> . Phillipi	Isle of Zebu.
.. <i>nodulosense</i> . Brug	Coast of Africa.
.. <i>asperme var.</i> Pease	Sandwich Isles, Isle of France.

ALPHABETICAL LIST of MARINE SHELLS—continued.

NAME.	Habitat as noted upon the same Species in the British Museum.
<i>Chama macrophylla</i> . Chemnitz.. ..	West Indies.
<i>Conus betulinus</i> . Linnæus	India and Ceylon.
<i>obesus</i> . Ilwaco	Not observed.
<i>striatus</i> . Linnæus	Africa, Isle of Anna.
<i>terminus</i> . Lam.	Ceylon and Mauritius.
<i>tesellatus</i> . Borr.	Madagascar.
<i>textile</i> . Linnæus	Asia and Isle of Anna.
<i>virgo</i> . Linnæus	Africa, Ceylon, &c.
<i>Cypræa carneola</i> . Linnæus.. ..	Asiatic Ocean, Isle of Anna, Sandwich.
<i>caput-serpentis</i> . Linnæus	Mauritius and Mussatella Islands, New Zealand.
<i>cavertica</i> . Linnæus	Indian Ocean, Red Sea, Eastern Seas.
<i>diluvium</i> . Reeve	Same shell. Philippine Isles.
<i>undata</i> . Soland.	
<i>Isabella</i> . Linnæus	Mauritius and Sandwich Isles.
<i>Lamarekii</i> . Gray	Mozambique
<i>lynx</i> (young). Linnæus	Mozambique and Madagascar.
<i>helvola</i> . Linnæus	Indian Ocean, Ceylon, Sandwich.
<i>moneta</i> . Linnæus	Atlantic, Ethiopic Oceans, West coast of America and Fiji Islands.
<i>onys</i> . Linnæus	Asia, San Diego, California.
<i>reticulata</i> . Martyn	Eastern Seas.
<i>staphylæa</i> . Linnæus	Philippine Isles, Sandwich.
<i>tabescens</i> . Soland.	Sandwich, Ceylon.
<i>tolpa</i> . Linnæus	India, Sandwich.
<i>vitrellus</i> . Linnæus	Indian Ocean, Eastern Seas.
<i>Dentalium longitorrsum</i> . Reeve.. ..	No locality.
<i>Dolium costatum</i> . Deshayes	No locality.
<i>Deshayesii</i> . Reeve	Philippine Isles.
<i>dearium</i> . Lamk.	Ceylon.
<i>melanostoma</i> . Jay.. ..	
<i>Fanea area</i> . Dunker	Not found in cases.
<i>Fasciolaria trapezium</i> . Linn.	Philippine Isles
<i>Ficula reticulata</i> . Lamk.	Not found in cases.
<i>Harpa ventricosa</i> . Lamk.	No locality.
<i>Mactra hians</i> . Phillips	
<i>Mitra intermedia</i> . Kiener	Not found in cases.
<i>papalia</i> . Lamk.	Sandwich Isles.
<i>Murex brevispina</i> . Lamk.	Coast of Arabia, Swan River.
<i>haustellum</i> . Linnæus	Asia, America, and Red Sea.
<i>ramosus</i> . Linnæus	Eastern Seas.
<i>Nassa coronata</i> . Lamk.	Natal, South Africa.
<i>Natica mamilla</i> . Lamk.	Isle of Luzon, Fiji Island.
<i>Navicella porcellana</i> . Linn.	Mauritius.
<i>Obeliscus maculosus</i> . Lamk.	No locality.
<i>Olivæ inflata</i> . Lamk.	Zanzibar, Carmione. Gray.
<i>Orula angulosa</i> . Lamk.	Not found in B. M.
<i>Pleurotoma Garmonii</i> . Reeve	Mozambique, Isle of Zebu.
<i>Pteroceras aurantia</i> . Lamk.	Philippine Islands.
<i>lambia</i> (young). Linn.	Bramble Key, Torres Straits.
<i>rugosa</i> . Sowb.	Society Islands.
<i>Pyrazus palustris</i> . Linn.	East Indies, Australia, Port Essington.
<i>Pyruia bulbosa</i> . Soland.	Not found in B. M.
<i>Ranella foliata</i> . Broderip	No other specimens observed in B. M.
<i>Solarium perspectivum</i> . Linn.	Madagascar.



COMPARISON OF LAND AND FRESHWATER SHELLS FROM VICTORIA NYANZA, ALBERT NYANZA, TANGANIKA, NYASSA LAKE, MOMBAS, AND SEYCHELLES.

VICTORIA NYANZA. The "Speke and Grant Expedition." Vide "Proceedings of the Zoological Society," for this complete List, 25th March, 1864.	ALBERT NYANZA. "Sir A. Baker's Expedition." Vide "Proceedings of the Zoological Society," for this complete List, 26th June, 1866. By Henry Adams, F.L.S.	TANGANIKA LAKE. "Barton and Speke's Expedition." Vide "Proceedings of the Zoological Society," for this complete List 1859, with dates.	NYASSA LAKE AND ZAMBEZI RIVER. "Livingstone and Kirk." Vide "Proceedings of the Zoological Society, 24th February, 1865, for this complete List.	MOMBAS AND SEYCHELLES. "Baron von der Decken's Expedition." Vide Hartl and Fusch's Work for this complete list.
<i>Utrina</i> , sp.? Locality doubtful. <i>Nanina</i> ?, <i>Mozambicensis</i> (Pfr.). Uzaramo and Victoria Nyanza				<i>Nanina Mozambicensis</i> , var. <i>albopicta</i> . <i>Nanina pyramidea</i> , n. sp. Mombas.
+ <i>Limicolaria</i> (Bullius), <i>Nilotica</i> (Pfr.). Karagash and Uganda + <i>Limicolaria flavum</i> (Müll.) Ditto + <i>Limicolaria tenebrica</i> (Reeve). Uganda .. + <i>Achatina Spekei</i> (Dohrn, n. sp.). Victoria Nyanza ..	<i>Limicolaria tenebrica</i> . Is found at Ibu and Guinea ..	<i>Bulinus Caillaudi</i> (Pfr.). Between Tanganika and East Coast <i>Achatina glutinosa</i> (Pfr.), one specimen. Between Tanganika and East Coast ..	<i>Bulinus strictus</i> (Martens) } Under tree-bark, dry <i>Bulinus calenatus</i> (Martens) } season. <i>Bulinus Kirkii</i> (Dohrn, n. sp.) Mainland, Mozambique. <i>Achatina Lamarckii</i> (Pfr.) .. <i>Achatina panthera</i> (Pfr.). Mozambique and Zambesi .. <i>Cyclostoma culicureus</i> . Near Tete and on Lake Nyassa, &c. <i>Lymnaea Natalensis</i> (Krauss). Lake Nyassa. <i>Lymnaea</i> , sp. } <i>Planorbis</i> , sp.? } The literature of these is not sufficient } to name the species. <i>Physa</i> , sp.?	<i>Achatina fulica</i> (Fer.). Seychelles. <i>Cyclostoma pulchrum</i> (Gray). Seychelles.
<i>Cyclostoma coloratum</i> (Sow.). Locality doubtful .. <i>Lymnaea</i> , sp. Victoria Nyanza and White Nile .. <i>Planorbis</i> , sp. Victoria Nyanza, and 4° north latitude ..	<i>Planorbis</i> , sp.? Brought by Speke from Victoria Nyanza. H. Ad. ..			<i>Physa Seychellana</i> . Seychelles. <i>Physa Africana</i> (Krauss). Zanzibar. <i>Physopsis Africana</i> (Krauss).
<i>Physopsis Africana</i> (Krauss). Mixed up with Nilotic shells, locality doubtful .. <i>Lanistes purpureus</i> (Jonas) } Probably East African .. <i>Lanistes orum</i> (Peters) } + <i>Lanistes Bolleianus</i> (Chemn.). Nile and Victoria Nyanza ..	<i>Lanistes</i> , sp.? Too immature for the species to be determined ..	<i>Lanistes miniatrorum</i> (Lea), one specimen. Ugogo ..	<i>Physopsis Africana</i> (Krauss). Lake Nyassa .. <i>Lanistes purpureus</i> (Jonas). Lagoos, near Mozambique. <i>Lanistes orum</i> (Peters). Zambesi, Lake Nyassa; large. <i>Lanistes Nyassanus</i> (Dohrn, n. sp.). Papyrus roots in Lake Nyassa.	<i>Ampullaria adusta</i> (Reeve).
<i>Ampullaria speciosa</i> (Phil.). River Kigani, East Coast. <i>Navicella porcellana</i> (Linn.). Johanna Island. + <i>Paludina unicolor</i> (Oliv.) } Nile & Lake Victoria Nyanza; one + <i>Paludina bulimoides</i> (Oliv.) } specimen of the latter is gigantic <i>Melania tuberculata</i> (Müll.). Probably from Nilotic district..	<i>Melania tuberculata</i> . (Müll.) ..	<i>Melania nassa</i> (Woodward), two specimens. Tanganika	<i>Paludina polita</i> (Frauenfeld). Lake Nyassa. <i>Paludina bulimoides</i> (Oliv.). River Rovuma. Dohrn states that this is the only North African shell in this list. <i>Melania tuberculata</i> . Lake Nyassa, India, &c. .. <i>Melania nodicincta</i> (Dohrn, n. sp.) Papyrus roots. South end of Lake Nyassa. <i>Melania Victoris</i> (Dohrn, n. sp.) Victoria Falls, Zambesi.	<i>Melania tuberculata</i> (Müll.). Mozambique.
+ <i>Corbicula fluminalis</i> (Müll.). Probably from Nilotic district + <i>Unio Caillaudi</i> (Fer.) } Known Nilotic species .. + <i>Unio Egyptiacus</i> (Caill.) } <i>Unio Mozambicensis</i> (Peters). This lives with the following species in the River Zambesi .. <i>Spatha Petersi</i> (Martens) .. <i>Spatha Wahlbergi</i> (Krauss). Known from the Limpopo River in Caffraria .. + <i>Spatha dubia</i> (Gmel.) } Both common Nile shells .. + <i>Spatha rubens</i> (Lam.) } + <i>Etharia Caillaudi</i> (Fer.). Confined to Upper Nile.	+ <i>Corbicula radiata</i> (Phil.) Well-known Nile shells. (H.A.D.) + <i>Corbicula purilla</i> (Phil.) <i>Unio Caillaudi</i> (Fer.) } Well-known Nile shells .. <i>Unio Egyptiacus</i> (Caill.) } <i>Unio Bakeri</i> (H. Ad.) } Albert Nyanza resembles <i>Unio africana</i> (Lea), from Lake Nyassa .. <i>Unio acuminatus</i> (H. Ad.) } Albert Nyanza ..	<i>Unio Burtoni</i> (Woodward). Lake Tanganika .. <i>Unio</i> sp. } <i>Unio</i> sp. } Ugogo District; old valves, one specimen of each <i>Unio</i> sp. } <i>Pleiodon Spekei</i> (Woodward), one specimen } Tanganika <i>Lythoglyphus conatus</i> (Woodward, two specimens) } Lake <i>Pupa grandis</i> (Desh.). From a Masjid. Island of Kilwa	<i>Unio Kirkii</i> (Lea) .. <i>Unio Nyassensis</i> (Lea) <i>Unio aserula</i> (Lea) } Lake Nyassa. <i>Spatha alata</i> (Lea) <i>Spatha Nyassensis</i> (Lea) <i>Spatha modesta</i> (Lea)	
<i>Vitipera unicolor</i> (Oliv.) <i>Bithynia badiella</i> (Parr).		Total Eleven	<i>Eumecurus levigatus</i> (Dohrn, n. sp.). .. <i>Helix Mozambicensis</i> (Pfr.). Mozambique, Tete Nyassa .. <i>Streptaxis Kirkii</i> (Dohrn, n. sp.). Rocky Island in Lake Nyassa. <i>Cyrenus acutifrons</i> (Martens). Lake Nyassa, Shire, Zambesi.	<i>Eumecurus minor</i> (Morelet). <i>Helix similis</i> (Fer.). Seychelles. <i>Helix adspersa</i> (Müll.). Seychelles. <i>Helix unidentata</i> (Chemn.). Seychelles. <i>Helicarion aureofuscus</i> . Mombas. <i>Bulinus punctatus</i> (Anton). Zanzibar. <i>Bulinus rhodotus</i> .
Total Twenty-seven.	Total Twelve.	Total Eleven	Total Twenty-nine.	Total Sixteen.

ALPHABETICAL LIST OF MARINE SHELLS—continued.

NAME.	Habitat as noted upon the same Species in the British Museum.
<i>Spartella sulca</i> . Swainson	Red Sea.
<i>Strombus floridus</i> . Lamk.	Red Sea, Philippines, and Society Isles.
.. <i>gibberulus</i> . Linnæus	Asia, New Zealand, Society Isles.
.. <i>auris-Dianæ</i> . Linnæus	Asia, Isle of Burias.
.. <i>lentiginosus</i> . Linnæus	{ Asia, America, Africa, Santa Cruz, Isle of Luzon.
.. <i>Mauritanus</i> . Lamk.	Red Sea.
<i>Tapes tularia</i> . Lamk. .. ..	.
<i>Tellina perna</i> var. } Spengler	Singapore.
.. ditto	
.. <i>rustellum</i> . Hanley	East Coast of Africa.
.. <i>starella</i> . Lamk.	Philippine Isles.
<i>Terebra dimidiata</i> . Lamk.	Society Isles.
.. <i>duplicata</i> var. Lamk.	Zanzibar.
.. <i>maculata</i> . Lamk.	Isle of France.
.. <i>monilis</i> . Quoy and Gaimard ..	New Zealand.
<i>Tridacna elongata</i> . Lamk.	Swan River.
<i>Trochus virgatus</i> . Gmel.	Red Sea = <i>Cardinalia virgata</i> . Gray.
<i>Turbinella rhinoceros</i> . Lamk.	No locality in B. M.
<i>Venus puerpera</i> . Linnæus	India, Australia.

VERTEBRATE ANIMALS: FISH.—On the rivers flowing to the east coast of Africa we found the natives wading along their beds, at this season, the 22nd of October, when there is but little water, catching fish, which were got out of holes on the banks or found in detached pools in the river-bed. They struck them with sticks and spears, and had many of them slung round their naked waists, measuring 18 and 20 inches long. The fish were *Clarias*—mud-fish. In the lake country of Karagweh the people do not fish much; the reigning family of Wahuma never eat them, but knowing we wanted some, the king brought us a living fish—a *clarias*—in a jar, saying that in another lake there were many different species; and if we wanted more we must have them caught on the sly, by fishermen, as he has a prejudice against any one interfering with the waters of his lakes.

While in Uganda we found that fish is not much eaten, probably because plantains are so numerous, though the king sometimes sent us smoked fish—"Makambaru;" but when we reached the Nile and the rivers flowing north, baskets of wicker, made in the form of a champagne-bottle, but 40 inches in height, were constantly found set in passages for fish. These baskets or cruives are laid upon their sides; both ends are open, but the larger end has a funnel of wicker, which allows the fish to enter or to be driven in, but it cannot escape.

Several varieties of fish, sun-dried and ungutted, were sent us in bundles by the king of Unyoro, and one species was recog-

nised by our followers as "Macquareh," scaly, and only 3 inches in length. This fish had been caught by our men in the Shakka Lake, Karagweh.

The following fish have been named, from specimens chiefly, by Dr. A. Günther, of the British Museum:—

Distichodus sp. (?)—Two specimens of this fish were seen on the Nile at 2° N. lat., floating dead down the river, and were eagerly picked up by our boatmen. They were elegant-shaped, scaly fish, reminding us of our salmon, and weighed seven pounds, more or less.

Mormyrus Petersii.—Caught by Speke at Urondogani, near the outlet of the Nile, and the original sketch is in the R. G. S. (size 6 inches, back leathery, scales on the belly, teeth.—J. H. S.).

Mormyrus sp. (?)—Caught at Urondogani, near outlet of the Nile from the lake. Original sketch by Speke in R. G. S.; size 5 to 6 inches. ("Burumwa," life size, teeth and scales, eyes green. Nile, July 1862.—J. H. S.)

Mormyrus sp. (?)—Caught ditto, ditto. Sketch by Speke in R. G. S.; natural size, 10 inches. ("Teeth and scales; colour a red-yellow, eyes yellow, called 'N'dowe.'" Nile, Urondogani, July 1862.—J. H. S.)

Mormyrus sp. (?)—Same locality. The original sketch by Speke, in the R. G. S., is 9 inches long, and is coloured of a black-blue. (Teeth and scales, N'churu, Urondogani, Nile, July, 1862.—J. H. S.)

"N'churu."—Same locality. Original sketch in R. G. S., 6½ inches long. (Life size, teeth and scales. Nile, Urondogani, July 1862. N'churu.—J. H. S.) But Dr. Günther has not sufficient data to give its generic name.

Chromis sp. (?)—A sketch of this, by Speke, is in R. G. S., but has no note. At Ukuni, on the southern slope of the Equator, unconnected with the Nile, on the 18th July, 1861, I caught what is thought a chromis, three-quarters of a pound in weight; but they attain arm's length, I was told. The same, probably, was caught in an east coast river, and ate very sweet.

Sticklebacks—called by natives "gogo"—were caught in pools of water with the Bagrus at Ukuni, on 17th July, 1861, and on a few other occasions.

Kneria Spekii.—Found in Uzaramo, and mentioned at p. 372, vol. vii., of Dr. Günther's 'Catalogue of Fish.'

Bagrus sp. (?)—At Ukuni, 4° S. lat., this fish was caught in numbers, weighing twelve pounds, in ponds, by our men using hurdles and killing them with sticks. General colour, a pink-brown. It is called "Makambata" by men who had seen it in

Heeao, 10° s. lat.; this native name is also given to a *Clarias* sp. The Egyptians call cattle "Bagm," which, I am told, is the derivation for the generic name.

Clarias—? *anguillaris* (Hassely), ? *Senegalensis* (Val.).—The original sketch by Speke is in R. G. S. ("Samaki Kambari," half size, caught in the Kwaleh Nullah, near Rubuga.—J. H. S.) At 4° s. lat. I caught this by fishing with a bait of eold meat, weight three pounds. The general colour of the back is that of mud, and of the under parts reddish-white. We ate this fish also in Usagara, 6° 7' s. lat.; it was fat, and tasted like an eel: there were no bad after-effects.

Lepidosiren sp.—At Zanzibar, on the 29th September, 1860, I went on board the ship *Guide* to see Rae, of Livingstone's party, and saw with him a living fish, which he was taking to England as a curiosity. It was a mud fish, or an animal between an eel and a snake in appearance, for its fins, at the ears, were round, and those at the anus were round also. Its tail was ridged above and below with fin, and the length was 2 feet; colour mottled grey, head flat and shark-like: natives said that it eats its own tail. When in Unyoro at 2° n. lat. the king frequently sent us presents of dried fish, and amongst them were this (?) genus, as made out, from my notes, by Dr. Günther, namely:

"24th October, 1862.—The king sent us four loads of smoked, black fish (64 of them), each the size of a kippered salmon, but narrower; a stick ran through the centre of each side. They were scaly, and the anal fins—3 inches long—seemed round and tapered. Our men (from Zanzibar) had never seen such fish before, and knew no other name for them but crocodile—'Mamba,' 'N'Gweena.' Those who had been with Speke at the outlet of the Nile from the Lake, purchased some of the same, but were disgusted on finding that the women of the country refused to cook them; also, the women of Unyoro ran away on being offered them, but the men did not object to eat them." All this made me inquisitive.

"I tried a bit of one; it had been unequally smoked and dried; the tail was hard as a stick, and the shoulders tasteless and leathery: so they were condemned by ourselves and our men. Next day, the 25th of October, after receiving those fish, my journal notes: 'Manua (a native of Unyamezi, one of our faithful followers) calls the round fins at the anus of the dried fish of yesterday the *teats*, for it is a notion of these people that these fish give milk, as they likewise fancy that the crocodile does, therefore they are called "mamba"=crocodile; also, because they have big strong teeth which, in these dried specimens, are very visible.' The eyes seem small, scales shaped so

(sketched in my journal) numerous, flatly rounded, and dotted. Manua added, on my asking him why he should have such a prejudice about not eating them, 'I have not eaten any kind of fish since I was born, and I do not mean to begin by eating these dirty beasts, which have the breasts of women.'"

It is very satisfactory, after ten years, to have this settled; and to find that the specimens given us with so liberal a hand by the king of Unyoro were *Lepidosiren*, the singular animals placed by different observers, alternately, amongst Fishes and Batrachia.

Frogs.—From the difficulty of carriage, we could make no collection of these; but they were numerous, and noisy in the rainy seasons. The natives use them in their "Fetish," for upon several occasions we have observed frogs tied by the leg at cross roads.

SPEKE'S SNAKES.*

Python Seber.

Coronella sp. Killed 8th October, 1860, Uzaramo. Two feet long, head and tail preserved. Two species of the *Coronella* were found by Kirk in Zambezi-land.

Psemmophis sibilans. Found by Kirk in Zambezi-land.

Psemmophis sp.

Bucephalus Capensis (Smith). This species was found by Kirk in Zambezi-land.

Ahatulla irregularis. Found by Kirk in Zambezi-land. A *Semioxnietegata* was also found by Kirk.

Ahatulla Natalensis. Killed 12th October, 1860, Uzaramo. Beautiful pale green.

Ahatulla sp.

Echidna urielans. Killed 19th December, 1860, Ugogo. Two and a half feet long, greatest diameter five inches.

Echidna sp.

Naja haje. N. Mozambica was found by Kirk.

Causus rostratus, n. sp., Ugogo, ten inches long. For description and plate, See 'Proceedings of the Zoological Society,' 8th March, 1864.

Of the above twelve species (few or none of which are from Nile-land), all but seven were found by Dr. Kirk in the Zambezi and Nyassa regions, and are mentioned in the 'Proceedings of the Zoological Society,' of 28th June, 1864.

At Ugogo, and in descending the Nile, we observed water snakes; one, of 5 feet long, came with reared head at our boat, but the oars of our men frightened it away.

During the whole journey, as far as my memory serves me, we never lost a man from, nor saw a case of, snake-poisoning: this is so different to my Indian experience, where so many die annually from snake-bites, and where snakes are more frequently seen than in Africa.

* From the 'Proceedings of the Zoological Society,' 8th March, 1864. By Dr. A. Günther.

LIZARDS.—‘Proceedings of the Zoological Society,’ March 8, 1864, state that two specimens of *Agama*, two of *Eremias*, one of *Phelsuma*, and one of *Eumeces* were collected during the expedition, namely,—

Agama aculeata.—Two other *Agamas* were found by Kirk in Zambezi-land.

Eremias Spekii.—Described as one of three new species by Dr. A. Günther in the ‘Annals and Magazine of Natural History’ for May, 1872, as having been found by Captain Speke, at 5° 7' south latitude.

Phelsuma cepedianum.—This species was found by Kirk in Zambezi-land.

Eumeces Afer.—The Tiliqua of the ‘Proceedings of the Zoological Society,’ March 8, 1864.

Family of *Geckoes* (?).—A kind of lizard double the size of the ordinary species noticed, was found on the outside of the grass huts on the Nile bank, on November 18, 1862. It was coarsely shaped, had a rough, blotched, black skin; stumpy tail, roughed like a file, with curiously-formed feet, and the head resembling that of a chameleon. It was known to our followers from the east coast.

Lizards.—At Ugogo I went to examine a mass of rock near camp and with my rifle shot two superbly-coloured lizards, 12 inches in length. Their heads and shoulders were pale vermilion colour, and the rest of their bodies a light blue. They were too shattered for preserving.

Two distinct species of gecko lizards were very common in the huts we occupied while at Unyoro; I do not know which were most numerous in these huts, lizards or rats, but they took no notice of each other, for their food is quite different. Both species ran about the ceiling, made of cane and grass; and, of necessity, were as often with their backs downwards as in the natural position. The smallest species had a bright stripe along either side, from the arch of the eye to the tail. The other and larger lizard had a dark back, brightly spotted, with a fish-like yellow belly. Both were very symmetrical, and had smooth skins. It was interesting to observe them chasing each other, or fighting together in circles, trying to bite each other's tails and legs, and giving a severe grip with their teeth; or to see them rush at a red centipede, common in October at Unyoro, the lizard would give the insect a vicious shake as a dog would a rat, and run back to the grass or to the hut, leaving the centipede quite still. On examining the insect, the head was gone, and the body with legs was left entire. These lizards were also seen to feed upon cockroaches, flies, and would pick the bones of a fowl thrown to them.

Chameleons.—A few of these were observed. In Ugogo, on December 7, I saw a pale green one, as thin as a lath, standing stupidly in a field, as if it had just come to life or was in a dormant state. At Zanzibar, on September 1st, caught one ten inches long, on a tree; it was a stupid sleepy reptile, but on being annoyed opened its mouth and emptied its lungs of air.

Crocodiles (*Crocodilus*).—We had many opportunities of observing them.

In October, on the Kingani river, east coast, which has steep mud banks 15 feet above the river's edge, and tall grass upon them, we saw crocodiles basking, with their red mouths wide open, and their leopard-spotted skins glittering in the sun; the noses were snub, and the animals averaged 12 feet in length.

The tributaries to the Nile at $3\frac{1}{2}^{\circ}$ N. lat. are full of crocodiles. On January 31, two eggs were brought us, a portion of 99 found under a foot of sand in the bed of a stream. They were larger and longer than the egg of a turkey, but pure white and pointed at both ends, without being larger at one end than another, one-third of one end was an air chamber. The Mahomedan ivory traders from Khartoom ate them, saying they were excellent, but we did not enjoy ours. They also ate the flesh of one killed on January 14, 1863. The natives make necklaces of their teeth.

High up the White Nile, at 5° N. lat., we heard that the crocodile attains a great size, increasing in height as it gets older; some are said to be the height of a dining-table, and 25 feet long. Such do not attack human beings, perhaps they are afraid to; though, every season, accidents occur of men being pulled under the water by crocodiles. At Gondokoro, the natives constantly swim across the great river in company, but they have to yelp like dogs, calling "Ow, ow!" all the while to frighten away the crocodile. I must say that this is very brave, but rather foolhardy of them.

At the junction of the Bahr-Gazelle with the Nile our men found a crocodile's nest, with 77 eggs, all neatly placed, and brought a quantity of them on board, this was on March 10. All were fresh-looking; but I could not be tempted to eat of them. though Speke had half a one, which was so strong-flavoured that the taste could not be got rid of all the evening.

Further down the Nile, where the Egyptian population commences, crocodiles watch for sheep or goats, or even for those who go to the water's edge, and a place for smaller animals to drink at may be seen fenced round, so that no crocodile may attack animals or people taking water. Another precaution is necessary, wells are dug on the sand shore for women to fill their earthen jars.

Sea Turtle.—*Chelonia Midas*, the green turtle, observed on our voyage out to Zanzibar.

On August 1, 1860, we landed at the coral island of Europa, about lat. 22° s., long. 39° E., to secure some turtle. Four were turned and taken on board ship, where some were kept alive for upwards of twelve days. While on the shore lying on their backs, land-crabs attacked their eyes viciously, and would soon have destroyed them. Their weight averaged 360 lbs.; all were females who had gone to deposit their eggs—August 1—in the sand of the shore. Hundreds of eggs were obtained and were poached; in taste they are the same as those of a fowl, nothing nauseous about them; in shape they are spherical, and are covered with a soft white skin, having a single depression upon it, but not on any particular place. Whenever the ship anchored, the captured turtle were allowed to have a swim, by attaching a rope to them; they enjoyed this, and made antics in the water, coming up to blow every thirty seconds. It is a common belief that these turtle will only die after the sun has set, but this is founded on the fact that cold-blooded animals are more tenacious of life than warm-blooded. If a wire were passed down their spines, Dr. Hardy tells me, this would soon terminate life. The manner of killing them on board ship by the butcher was to hang them by the rear fins, make incisions in the groins and cut their necks all round, allowing them to die after sunset. Their blood was observed by thermometer to be 76° Fahr., two degrees lower than the temperature of the air, and it poured out thick.

At Zanzibar, on the sand shore, the footprints of this turtle were observed.

Land Tortoises.—The shell could be purchased at Zanzibar, in 1860, at the rate of three pounds weight for ten dollars. Four specimens were collected by the expedition. Dr. Gray has kindly given me their names.

Testudo pardalis.—About half grown, and in a good state. (G.)

Kinixys Spekii.—This may only be a bad specimen of *K. Horneana*. (G.)

Pelomedusa sp.—Impossible to determine, but is possibly *P. Gehafise*. (G.)

BIRDS.—Of the following 140 species, 62 of 70 specimens were described from aetnal specimens by P. L. Selater, in 'Proceedings of the Zoological Society,' of March 8, 1864; the others were variously identified, by coloured drawings we had with us upon the journey, by 45 drawings we made, and from notes written on the spot from specimens seen. Both of the latter have been approximately named, through the kindness of Mr. Blyth, and I have obtained assistance from the

valuable German work by Hartlaub and Finsch, on the collections of the late much lamented Baron von der Decken.

1. *Podicipidæ*, or grebes, were observed on the Nile to the north of Gondokoro.

2. *Graculus lucidus* (Licht.).—Three of them seen in Unyamezi, January 15, 1861, pluming themselves during a shower while on the rocks of a stream. They took no alarm till my gun arrived, but flapped their wings enjoying the downpour.

3. *Pelicanus* sp., perhaps *P. minor* (Rüpp.).—Found at Uganda, where the Nile leaves the lake, and all along the Nile to below Gondokoro, where, on February 27, strings of grey pelican—(?) young birds—were flying about our boats. The head of one was brought home.

4. *Sterna* sp.—While descending the Nile at Unyoro, on November 16, we saw many small sterna flitting over the river and darting in their flight at the hippopotami in the river.

5. *Anas flavirostris* (?).—In Usui, on November 8, saw two ducks with grey-like plumage and yellow bills, their bodies were small and long.

At Karagweh, in December, flights of duck flew with a rush over our heads down to the lake nightly, when it was too dark to see them.

6. *Sarcidiornis melanotus*.—Towards Gondokoro, on January 16, shot a "mitka" in the rushes; she was black above, grey below, head black and spotted, and without any knob on the nose; swift flight. "This duck is very common all over Unyamezi in the rainy season, frequenting the pools and lakes in considerable flocks."—J. H. S. Coarse eating. Figured by both Speke and Grant in R. G. S.

7. *Plectropterus Rueppellii* (Schäfer), 'P. Z. S.,' 1859, p. 132, pl. 153.—"Unyamezi. Found on the lakes, whence it resorts to the rice-fields to feed."—J. H. S. Speke shot four one evening at Mininga, one flew into a tree; gander weighed 9 lbs.; necks the colour of snuff; spurs to the shoulders. Gander has a skin patch on either side of the smallest part of his neck, and a warty skin wattle. A coloured sketch by Speke is in the R. G. S.

8. *Cairina moschata* (Linn.).—"This is the only tame duck of Mininga and Unyamezi generally. It has been introduced by the Arabs."—J. H. S.

9. *Chenalopez Aegyptiaca* (L.).—Speke shot one on the Karagweh Lake, December 19, and gave it to the Sultan, who was much delighted with its lovely plumage.

10. *Dendrocygna viduata* (L.).—Mininga, shot flying, out of a large flock.—J. H. S. A coloured sketch, by Speke, in R. G. S.

11. *Geese*.—Large birds, black and white, were in swarms on the Nile, south of Khartoom, March 18.

12. *Ortygometra nigra* (Gmel.).—Black rail. Uzaramo. Frequent the rice-fields where the present specimen was shot.—J. H. S.

13. *Gallinago* sp.—Saw snipe, November 24, 1860; and at Gondokoro on February 24, 1863, a flight of them passed over us from east to west.

14. *Scopus umbretta* (Gmel.).—The umbrette is very common from the coast to Kazeh, frequenting pools of water and ravines. It stands watching the water like a heron, and flies up into a tree on being disturbed.—J. H. S.

15. *Ciconia Abdimii* (Licht.) = *Abdimia sphenoryncha*.—Found feeding in January on caterpillars in a young field of rice, grossly fat, not wild, scarcely any tongue, merely a short thing in the throat, bill red inside, purple cheeks; the feet and the joints of the legs and the skin of the wing-bones are of a red sealing-wax colour; the black plumage is of a shining bottle-green colour, very handsome; expanse of wing 5 feet; curlew walk.

16. *Leptoptilus crumenifer* (Cuv.).—Seen in Unyamezi. The Sultan of Ukuni got me to shoot some, as he wanted their fine feathers. It is the same as the Indian "adjutant."

17. *Otis melanogaster* (Rüpp.).—This floriken was seen occasionally in Unyamezi. It haunts grassy spots in twos and threes, and is rather shy. The example brought home was shot at Urondogani, in Uganda. The irides are yellow; weight, two pounds; length between tips of wings, 3 feet 6 inches; white spots on the wings, by Grant, at Ukuni.—J. H. S. In July at Ukuni, they are fat and fine flavoured, heaviest two and a half pounds. During sunshine they can be more easily approached than in the cool morning. They have a rough gritty call. I rather think that the two following species were seen also.

18. *O. picturata* n. sp., and *O. humilis* of Blyth were both observed. Speke wrote of the latter that "he found it numerous in the interior south of the equator." Vide p. 618 of 'Hartlaub and Finsch.' Drawing in R. G. S. by Grant.

19. On December 9 and 10, at Madi, a large bustard rose with the noise of wing and hurried flight peculiar to this tribe, and swept round me, making a majestic curve over the tops of trees, and descending to lower ground near water; again on December 31, a large bustard, with one conspicuous white patch upon the upper surface of its expanded wings, rose heavily, with difficulty gathered up its legs, and after a long flight ceased moving its wings, and descended in a quiet spot. Speke had seen three, and we sallied after them; but were not successful, having bullets in our guns.

20. *Ardea bubuleus* (Savign.).—Seen standing upon the backs of hippopotami on the Nile, north of Gondokoro.

21. *Grus pavonina*.—General colour a slaty black or blue, with brick-red, fibrous yellow feathers in the wings; hackles similar in colour to those of our heron, and the rump is fully covered with beautiful blue down; bill black, mandibles equal; above bill there is a rich black top-knot, behind which a straw-yellow raisable bunch of flat 4-inch long fibres, with a few black featherlets near the roots. Below the eye there is a chalky-white bare patch of skin, the shape of a half-moon, beneath this there is a scarlet wattle. It was shot on April 16, 1861, and allowed me within 30 yards of its tree; when wounded it went away crying like a peacock, and the skin was brought me five days afterwards. Seen also March 18, 1863, on the Nile, south of Khartoom.

22. *Struthio camelus* (L.), called "M'bonne" in Africa, and "Shuter moorg" = camel-fowl, in India. We observed several gangs in Ugogo, but they did not allow a nearer shot than 300 yards. We saw one domesticated at Khartoom for its feathers, which are plucked for the market every time they grow large enough, a cruel arrangement; but this custom is recorded in Captain Lyons's (R.N.) work on North Africa, published fifty years ago, where the natives keep the birds and pluck them three times in two years. Mr. Blyth pointed this out to me, and says the plan which he originally proposed when in Cape Town of giving the birds chloroform before being plucked answers admirably at the Cape, where there are farms for them.

23. *Quail; Colurnix sp.*—Several notes were made upon them. Seen July, October, and December.

24. The Button Quail, *Turnix sp.*, had dark brown plumage and white throat, October 8, 1860. Quail, December 9, 1862, Madi, a solitary quail, its expanded wings were a transparent red colour in the morning light.

25. *Francolinus gariensis* (Smith).—Partridge: full size of male, only half a pound to three-quarters weight; called "Kew-tee" (Kis.), and mencee (Kin.). It scrapes and scratches the ground, like the bush-turkey, but does not ascend trees. Sketched it 29th August, 1861. Legs, reddish, with one small button-like pearly spur; a plump little bird.

26. *Tree Partridge*.—Full size of female, one pound weight; called "Keecongong." On the 26th August, 1861, found one noosed by the natives; shot another in a tree, 20th December. The plumage is not unlike the Indian black partridge; have a coloured sketch made on the spot.

27. *Francolinus rubricollis* (Rüpp.) (?)—A large, handsome bird; something like the koklas-pheasant of the Himalayas, but with scarlet throat.

28. *Francolinus Cranchii* (?)—The "Qualeh" (African), for it

pronounces this word as distinct as any human being: 25th July, 1860. Weight, $1\frac{1}{4}$ to $1\frac{1}{2}$ lb.; spur, single, flesh-coloured, blunt; legs, red; a red skin is around the eyes, and the whole of the throat; another had a very small second spur. F. Cranchii in Hartl. and F. has a yellow throat; native name, "Qualee," from its call. This bird is found in pairs, and breeding in coveys from the coast up to Usui, and is abundant in many places. The throat is yellow; naked space round the eyes bright red.—J. H. S.

29. The "*Booes*" (African) is similar to the above in size. Its call is "cockcock, cocok," and "chiek-a-chiek," &c., reminding me by its plumage of the "Cheer" pheasant of the Himalayas. In running they throw their legs very forward, and their bodies ludicrously far back. Two cocks weighed each $1\frac{1}{2}$ lb., had orange-red legs and the same colour of skin around the eyes and on the throats; one had two spurs on each leg. General colour of plumage, grey-like. Seen only at Usui in November.

30. *Francolinus gutturalis* (Rüpp.).—"All over Unyamezi."—J. H. S.

31. *Francolinus Grantii* (Hartl.).—"This francolin is found all over the forests of Unyamezi. I found young birds on the 20th February near Kazeh, in company with the mother."—J. H. S. See Fig. in 'Proceedings of the Zoological Society,' 1865, p. 665, pl. 39, described at p. 589 of Hartl. and Finsch, from our specimen in the Bremen Museum.

32. *Pterocles decoratus* (Cab.).—Sand-grouse were seen in Ugogo and Unyamezi (27th November, 1860), where this specimen was obtained.—J. H. S.

33. *Numida coronata* (G. R. Gray).—Native name, "Kunga." Uzaramo, and all along our route to Gondokoro, in flocks of twenty to forty. This guinea-fowl afforded us a constant supply of food when meat was scarce. In Unyamezi, or wherever the sweet potato was growing, they were abundant, roosting in trees at night. At Karagweh, on 10th April, their eggs were brought me. In July, at Ukuni, the young chicks were about fifty in one batch.

34. *Numida Granti* (D. G. Elliot).—Rare; seen only in Ugogo. Weight about 3 lbs., whereas the common guinea-fowl weigh up to $3\frac{1}{2}$ lbs. It was remarked that this bird had a peculiarly-shaped "merry-thought," affecting, I am told by Mr. Elliot, its peculiarly crane-like call, and that its top-knot and purple skin about the head was quite new; the loose skin of the neck resembles the fashion of a stand-up collar, and the back of the head is bald. Its plumage and form differ from the above species. It has been named from a coloured drawing, and

description by Grant (*vide* Elliot's magnificent work, 'Family of Pheasants,' Part IV., for life-size coloured drawing). Shot on the 8th December, 1860. Two or three were together in the jungle, away from cultivation; native name, "Kiroro."

35. *Gallus ferrugineus*, domestic fowl, was not uncommon, and could generally be purchased; it was the common, and not the game breed. A barbarous custom of cutting their nails off is practised at Zanzibar and Karagweh, to prevent their scratching up grain; some are quite crippled by it, and have to lie down. Another strange custom the Waganda have with fowls is that, in ferrying a river where there are hippopotami, no live fowls are permitted in the canoe. Neither pea-fowl nor turkeys exist in the parts we traversed.

36. Pigeon were seen domesticated in some of the Unyamezi villages; they were of various colours, with flesh-coloured legs, as far as my memory goes.

37. *Treron Delalandii*; the green Madagascar pigeon.—A handsome, plump bird; was often shot towards the coast while feeding upon wild figs, or it was found in Uganda, where the king sent us one he had shot, to be sketched for him. "Uzaramo, and all along our route to the north, in large flocks, affording good food."—J. H. S.

38. *Treron nudirostris* (Sw.).—"Proceedings of the Zoological Society," 21st April, 1863, Central Africa.

39. *Columba Guineensis* (?) (Briss.).—"Triangular spotted pigeon." "Shot at Kazeh and Mininga, but not observed anywhere else during the journey; seen in flocks in palm-groves of Mininga."—J. H. S. A beautiful, plump bird, but not good eating. A sketch by Speke is in the R. G. S. The feathers of the crop are forked, elbows and shoulders chocolate colour; tail black, with *one bar of white across it*. Around the eye the wattle is large and red; the rump, first joint of wing, and under the wing, is blue. Bill black, but white at base. Salt's 'Abyssinia' states that this species is domesticated, but this we nowhere observed; rather the reverse, for it is a shy bird.

40. *Chalcopelia chalcospilos* (Sw.).—"Obtained at Duthumi."—J. H. S. This, in Hartl. and Finsch, is under *C. Afra*, the African turtle-dove.

41. *Chalcopelia Afra* (Linn.).—Speke's note, on the figure by Wolf of this, says, "Reddish-purple legs, forehead lighter, but gradually merging to the same colour as the back, continuously down back of neck. These feathers should be generally lightened by a tipping of fruit-red. Rump brown, like the back, but separated from it by two strong bands of black, and one intermediate white, occupying a space of three-quarters of an inch. Unyamezi bird is one quarter longer than Wolf's picture."—J. H. S.

42. *Peristera tympanistria* (Temm.).—A small dove with dark-brown back and white breast, or, perhaps, dark-brown bars upon its back.

43. *Oena Capensis* (?).—On 25th June, 1861, shot a black dove with a white bar under its tail.

44. *Turtur capicola* (Sundev.).—Very common on the route from the coast to Kazeh, thence to Gondokoro.—J. H. S.

45. *Picus (Dendrobates) Schoensis* (Mas.) Rüpp.—“This bird was shot in Bogweh.”—J. H. S. See Speke’s note on it in the R. G. S.

46. *Zandostomus rufus* (Vieill.).—“Uzaramo.”—J. H. S.

47. *Pogonorynchus torquatus* (Dumont).—“Uzaramo. Found on the upper branches of the highest trees.”—J. H. S.

48. *Pionias fuscicapillus* (Verr.).—Very common in flocks. Uzaramo and interior plateaus. The specimen preserved was a female. Irides dirty-white.—J. H. S.

49. *Pionias rufiventris* (Rüpp.).—6° s. lat.

50. Parrots and paroquets were uncommon.

51. *Buceros flavirostris* (Rüpp.).—6°–7° s. lat.—J. H. S.

52. *Buceros nasutus* (L.).—A young bird of this, shot in Uzaramo, is in Bremen Museum.

53. *Buceros melanoleucus* (Licht.).

54. *Buceros cristatus* (Rüpp.).—Only seen in Uganda, where it flies about in small flocks from tree to tree, making a very loud, harsh noise.

55. *Buceros* sp.—Saw two large hornbills on the 2nd November, 1860.

56. *Buceros* sp.—Shot by Speke in Unyoro. Body as large as an “adjutant;” three equal toes, and legs short; awkward, waddling walk; several feeding on cultivated ground after the sun had set. Plumage black; primaries white; the feathers of the neck and chest stand out like hairs, not lying flat like its other feathers; bill black, with a helmet surmounting its base; eyes very large; tail compressed laterally.

57. *Tinetoceros Abyssinicus* (Gmel.).—Unyoro. This hornbill is found in flocks of four or five feeding on the ground. When disturbed, they fly into trees. I saw them also in Madi.—J. H. S. At Madi, 26th August, saw three, very shy, taking short, languid flights.

58. *Schizorhis leucogaster* (Rüpp.).—“This Tournaco is rather common in the hilly country of Usagara, as also in Somali-land, where I found it amongst thorny acacias in flocks of four and five.”—J. H. S.

59. *Corythaix musophagus* (?) (Dubois).—Seen near the East coast, 25th October, where plantain and mango-tasting fruits were growing. Wings, port-wine colour; its top-knot was

raisable. Wild, flying from lower to higher branches, and then flying away, always keeping a sharp look-out.

60. *Colius striatus* (Gmel.).—Uzaramo. Also seen and shot at Usui. It is found in small flocks, frequenting the thickest bushes.—J. H. S.

61. *Passer Swainsoni* (Rüpp.).—Unyamezi and Karagweh. Frequents the villages like our house-sparrow.—J. H. S.

62. *Passer* sp. (?).—A coloured sketch of this by Grant is in the R. G. S., as one of four small Karagweh birds.

63. *Passer*.—In the R. G. S. there are three other coloured drawings by Speke of two undeterminable Karagweh, and one Unyoro sparrow.

64. *Amadina* (?).—On the 19th March, when sailing down the Nile to Khartoom, between swamp vegetation, I fancied seeing a distant range of hills; but the form changed and swayed about, and turned out to be a dense cloud of finches, covering a tenth of the horizon—a marvellous delusion. Again, when sailing at night through a narrow channel, we disturbed finches roosting upon the tall reeds of the banks; a flight of *Amadina* (?) took to wing, and, in the dark, I thought it was the noise of wind coming to strike our boat; it sounded as if coming through a forest of fir-trees; but, as no wind reached us, our boatmen assured me the noise was caused by a myriad mass of finches which we could not see. And so it was. I saw the same thing in Algiers, December 1873.

65. *Amadina* sp.—A coloured drawing by Speke in R. G. S.

66. *Amadina* sp.—A coloured drawing by Speke in R. G. S.

67. *Pytelia phœnicotis* (Sw.).—Unyamezi. Found in small flocks in the milk-bushes (*Euphorbias*) that, in some places, fence the villages. It is generally distributed in Unyamezi.—J. H. S.

68. *Pytelia* (*Estrela*) *minima* (Vieill.).—Unyamezi. Found in flocks in company with *Hypochera nitens*, in the villages.—J. H. S.

69. *Pytelia* sp.—A coloured drawing is in R. G. S. of *Estrela* sp., noted. “Irides red; Karagweh.”—J. H. S.

70. *Spermestes cucullata* (Sw.).—Unyamezi. Found amongst the *Euphorbias* which fence round about some villages.—J. H. S.

71. *Hypochera nitens* (Gml.).—Unyamezi. Glossy finch; common in the villages, where it feeds in the dirty lanes, and from heaps of dirt.—J. H. S. A coloured drawing by Speke in R. G. S.

72. *Soldier Finch and his Wife*.—Unyamezi.—J. H. S. Coloured sketch of both by Speke in R. G. S.

73. *Golden-tippet Finch*.—Shot at Mininga, 1861. Irides dark.—J. H. S. A coloured drawing by Speke is in R. G. S.

74. *Dark Finch*.—Unyamezi.—J. H. S. Coloured sketch in R. G. S.

75. *Speckle Breast*.—"Unyamezi."—J. H. S. Coloured sketch by Speke in R. G. S.

76. *Red Chops*.—"Unyamezi."—J. H. S. Coloured sketch by Speke in R. G. S.

77. *Vidua principalis* (L.).—The Widah bunting; locality not given.

78. *Vidua Verreauxi* (Cass.).—Mininga and Unyamezi. Flies about from the tops of the acacias.—J. H. S. Its flight is peculiar, from having to carry its long, curiously-formed tail. At starting it flies horizontally, and as steady as a railway-train. If ascending, it does so perpendicularly, and, before alighting, it descends almost head first, dipping and dipping gracefully, the tail waving about, and perches upon a high tree. A coloured drawing of male and female by Speke (of this species?) is in R. G. S., as one of four Karagweh birds.

79. *Penthetria eques* (Hartl.) = *Vidua eques*. Shot at Mininga. Seen in twos and threes among corn and long grass. For plate, see 'Proceedings of the Zoological Society,' p. 106, 1863.

80. *Penthetria macroura* (Gmel.).—Found in same locality as last, and has the same habit.—J. H. S.

81. *Pyromelana franciscana* (Isert.).—Unyoro. Found in large flocks in the corn-fields (*Holcus Sorghum*).—J. H. S.

82. *Pyromelana Capensis* (L.) = *Euplectes xanthomelas*, (Rüpp.). On Wolf's figure Speke remarks, "Same shot in Karagweh, head ruffed up, eye very dark, bill shorter, legs darker, wings blacker, and yellow continued to back like a tippet; down centre of breast a narrow line of straw-white feathers; otherwise Wolf's drawing is very good."—J. H. S.

83. *Pyromelana flammiceps* (Sws.).—Meeninga. Flies about in large flocks, feeding in the corn-fields, and roosting at night in the rushes of swamps.—J. H. S.

84. *Ploceus sp.* (Uzaramo).—Making their nests 14th October, hanging them from the trees as thick as apples, and overhanging the river.

85. *Hyphantornis Abyssinicus* (Gmel.).—Uzaramo.—J. H. S.

86. *Textor Dienemelli* (Horsf.).—Speke's specimen is in the Bremen Museum. His notes in the Royal Geographical Society on it say, "Same bird as Wolf's shot at Tura, but with blacker feathers on the wings, and slightly larger bill; also more red on the wings."—J. H. S. Goes about in small flocks.

87. *Notauges superbus* (Rüpp.).—Shot this in Somaliland; also at 6° to 7° s. lat.; but here the irides are white.—J. H. S.

88. *Lamprotornis sp.*—"The green species, golden or orange-eyed. Unyamezi."—J. H. S.

89. *Buphaga erythrorhyncha* (Stanley). Seen on the backs of cattle picking off insects, Ugogo. Known to our Cape-Mounted Rifles; a pretty bird, with painted bill.

90. *Lamprocolius melanogaster* (Sws.).—Unyamezi. Eyes snow-white. Wolf's drawing is good, but only 7-12.—J. H. S.

91. *Corvus affinis* (Rüpp.).—Seen at Madi, 3^d x.

92. *Corvus scapulatus* (?) (Dand.).—Seen at Karagweh, 12th April, 1862, two or three together. People complain of their being destructive to grain. The Sultan requested that one might be shot for him, as he wanted to perform some ceremony.

93. *Archicorax crassirostris*.—Shot November, 1860, near coast.

94. *Prionops poliocephalus* (Stanley).—Usui. Found in the small bushes.—J. H. S.

95. *Meristes olivaceus* (Vieill.).—Uzaramo. Shot by Captain Grant. Irides reddish-yellow. Found single in the bush; has a single note with a hollow sound.—J. H. S.

96. *Dryoscopus* or *Laniarius funebris* (Hartl.).—Described as a new species in the 'Proceedings of the Zoological Society,' 1863, p. 105. Captain Speke describes this as the black, "metal-toned whistler," from Mininga, and figures it in the Royal Geographical Society.

97. *Laniarius* or *Dryoscopus hamatus* (Hartl.).—'Proceedings of the Zoological Society,' 1863, p. 106. Unyamezi. Found in detached bushes.—J. H. S.

98. *Urolestes melanoleucus* (Jardine).—'Proceedings of the Zoological Society,' 1863, p. 106. Shot at Bogue; seen in small flocks. The present specimen shot while sitting upon the village palisade.—J. H. S.

99. *Dicrurus divaricatus* (Licht.).—King-crows were rather common all over Unyamezi and Uzaramo, resembling in their habits the well-known *D. macrocerus* of India.—J. H. S.

100. *Terpsiphona mutata* (Linné) = *Tschitrea Spekii* (Hartl.).—Mutable fly-catcher, observed in Unyamezi, Uzinza, and Uganda.—J. H. S.

101. *Muscicapa cinerea* (Hartl. and Finsch).—Uzaramo; the *Butalis* sp. (?) of the 'Proceedings of the Zoological Society,' 1863.

102. *Pycnonotus nigricans* (Vieill.) = *Ixos* sp.—The bulbul of Unyamezi, found all over the country, and well known as a songster.—J. H. S. A coloured drawing by Speke, in R. G. S.

103. *Oriolus monachus* (Gmel.).—Nun-thrush, common in Uzinza. Irides red; brought home one example.—J. H. S.

104. *Crateropus Jardini* (Smith).—Shot in Bogue, where I saw it flying about in flocks of ten and twenty in the forest. Rather pugnacious in disposition.—J. H. S.

105. *Crateropus* sp. (?)—A coloured drawing by Speke, in

R. G. S. "Golden-eyed penny trumpeter," Unyamwezi forests.—J. H. S.

106. *Megalurus* (?).—A small dark-brown bird: long tail, and tough leathery skin, like that of a mouse, and hair-like feathers; enormous anus, feet very soft and the colour of a red radish; bill stout, strong, and black. Found in the rushes, and called "M'Lindah." Has many birds following him. They are said to pick up all the feathers falling from his wings and to tear them up, to prevent natives tying them upon their arrows.

107. *Cichladusa arquata* (Peters) = *Bradyornis Spekii* (Hartl.).—Kazeh. The "morning warbler," as I named this species, was met with at Mininga. It came about our tents in the morning and delighted us with its cheerful song, being the sweetest singing bird we met with.—J. H. S. A coloured drawing by Speke in R. G. S.

108. *Cossypha* (*Bessonornis*) *semirufa* (Rüpp.).—This bird was seen in Karagweh and Usui.—J. H. S.

109. *Motacilla flava* (Linn.).—Yellow wagtail. Unyamezi.

110. *Motacilla vidua* (Sunder).—Unyamezi.

111. *Pratincola torquata*.—Stonechat. Speke's note in Wolf's drawing states: "Uzinza bird. Eye dark, feathers of the back are tipped like *Saxicola albobasciata*, and all red—the same colour as Wolf's figure."—J. H. S. Drawing by Speke, in R. G. S.

112. *Saxicola albobasciata*.—Shot in Usui. Same size as Wolf's figure, but with white extending from junction of head down sides of neck to the white belly; legs brown, but no tipplings on the back.—J. H. S.

113. *Nectarinia Habessinica*.—Found at Inenge.—J. H. S.

114. *Nectarinia cruentata* (Rüp.).—Karagweh and Unyamezi.—J. H. S. Coloured sketch in R. G. S.

115. *Nectarinia famosa*.—Named from a coloured drawing by Speke, in Royal Geographical Society. Karagweh.—J. H. S. The sketch is of a metallic green colour.

116. *Irrisor cyanomelas* (Vieill.).—Uzaramo.

117. *Merops erythropterus* (Gml.) = *minutus* (Vieill.).—Red-winged bee-eater. Shot at Mininga.—J. H. S. A coloured drawing, by Speke, of this "sunny flycatcher," is in the R. G. S.

118. *Merops* sp.—Green bee-eater. Seen 19th February at Gondokoro, where it has its nest in holes made in the perpendicular clay bank of the Nile. It takes short flights from the holes, alights upon the bank, and is off again. The rump is a circle of green, its head seems of this colour also; the rest of the plumage is of a blood scarlet, brightest at the neck; wings very pointed, tail squared, with two (?) long feathers from its centre. Not met with before this locality.

119. *Halcyon Senegalensis* (Linn.).—Misinga. Shot sitting on a tree over a brook.—J. H. S. The crab-eating kingfisher of East and West Africa. Coloured drawing, by Speke, in R. G. S.

120. *Halcyon Chelicuti* (Stanley), or *Chelicutensis*.—Bogue; found in the forest.—J. H. S.

121. *Coracias candata* (Vieill.).—Bogue, in Uzinza.

122. *Coracias* sp.—Shot near the coast.

123. *Eurystomus Afer* (Lath.).—Uzaramo. Shot October 7, 1860, a female, with eggs partially developed. Irides dark brown.—J. H. S.

124. *Hirundo rustica* (?) (Linn.).—Saw one on the East coast, 23rd October, 1860.

125. *Psalidoprocne albiceps* (Selat.).—Captain Speke brought home this new species from Uzinza.—Plate xiv. in the 'Proceedings of the Zoological Society,' 1864.

126. *Cecropis melanoerissus* (Rüpp.).—Shot in Usui.—J. H. S.

127. *Cecropis puella* (Rüpp.).—Unyamezi swallow.—J. H. S.

128. *Cosmetornis vexillarius* (Gould).—"This specimen was shot flying after dark in Uganda. At Urondogani others were seen often alighting upon the bare ground or cleared patches near villages, whence they flew when disturbed. This bird was well known to my servant 'Bombay,' who said it was very common in Uhiyao S^d s. lat."—J. H. S. Vide Plate at p. 462 of Speke's 'Journal,' &c., where it is named *C. Spekii*.

129. *Bubo* sp., probably *B. lacteus* (Temn.).—Camp Kari, by J. A. G. Brown wings, barred with speckly white.—J. H. S. Coloured sketch, by Grant, in R. G. S. Weight 9 lbs.

130. *Falco semitorquatus* (A. Smith).—Shot in Bogue while sitting in a tree.—J. H. S.

131. *Falco tanypterus* (Licht.).—Unyamezi. One example, irides yellow. Shot at Kazeh by myself.—J. H. S.

132. *Milvus Forskali* (Gml.).—Seen frequently on the journey; once particularly at Madi, 18th January, chasing a crow.

133. *Asturina monogrammica* (Temn.).—Red-nosed falcon; irides yellow. Shot at Kazeh by myself, after it had just devoured a small lizard.—J. H. S.

134. *Helotarsus caudatus* (Daud.).—Frequently observed at Madi.

135. *Spizaetus bellicosus* (?) (Daud.).—Observed near the coast.

136. *Heliæetus vocifer* (Daud.).—Saw this splendid bird on the Nile, 18th March, 1863.

137. *Pandion haliaetus* (?) (Linn.).—On the Nile north of Gondokoro.

138. *Vultur occipitalis* (?).—This is called the "M'sæga," which feeds upon the human victims of the king of Uganda.

It is the smallest of the three vultures observed, and is a dirty ragged bird, with dull sepia plumage and white ruff to the chest.

139. *Vultur aenicularis* (?).—This most resembles the king vulture. He is a handsome large bird, with nearly black plumage, but white on the rear half of his wings, on his rump, on his breeches, and a black ruff extending from the back of his head, and naked throat. Rüppell's fig. in birds of *V. occipitalis* comes nearer the bird than any figure I have seen.

140. *Vultur fulvus* (?) (Gmel.).—Called the "M'foongoo" (Kis.). A very bold and common bird on the route.

MAMMALS.—Thirty-nine of the following seventy-five species were mentioned in the 'Proceedings of the Zoological Society,' by P. L. Selater, 8th March, 1864, from specimens sent home by the expedition. The others have been determined approximately by competent authorities from drawings and notes made from specimens on the spot, as it was quite impossible for us to carry what we shot along with us.

1. *Elephas Africanus*.—Native name "Thembo." Met with from the east coast to Gondokoro, but principally in Unyoro during November and December. At Ugogo we found a sporting race—the Mukooa—from 8° s. lat., engaged in shooting elephants for their ivory. In Central Africa the natives will not venture near them, never capture them to utilise the sagacious animals, but wantonly kill females as well as males by pit-falls or traps, having a spear attached to a log. This is suspended from a tree, and falls on the animal should he let off the trap. The traders on the White Nile send large armed parties as far as the Unyoro frontier to collect ivory by bartering with beads, iron hoes, cloth, and cattle; but they are said to shoot the wild elephant.

The quality of the ivory seems to vary with the pasture and moisture, and its value increases with its size. In Unyoro the herds of female elephants, forty or more, had long small uniform tusks, useful for billiard balls, but which fetch little in comparison to the heavy tusks seen in the market at Zanzibar, where, in 1860, they brought 16s. per lb., and might have been purchased for a quarter of this in the interior, or at the rate of 30 dollars for 36 lbs. All the wild elephants seen by me in Africa struck me as being of a smaller type than those domesticated commissariat elephants I am familiar with in India.

2. *Hippopotamus amphibius* (Linn.).—Native name Keeboko. Speke shot one September, 1860, on the main land of Africa, opposite Zanzibar, in a tidal river. In December, at Karagweh Lake, the boatmen brought this animal within shot by making a peculiar noise; but they said none could be killed unless a

cow was presented to the god of the island in the lake. In May, on the shores of the Victoria Nyanza, we heard the trombone call of the hippopotamus, and saw its dried flesh in the huts of the people. When crossing the Katonga River we were ordered to kill the live fowls we had, for fear the hippopotamus would capsize the canoe. They were constantly seen in the Nile, where the natives harpoon them and capture them in traps. On the 27th February, 1863, while sailing through the Berri country, I counted a herd of twenty-two, their bodies as close as they could pack, frolicking about, spouting, dipping, snorting, and rearing their necks and shoulders out of the water. May this not be the breeding season? All ducked at 80 yards from us. I saw several packs besides this one, followed by terns and umbrettes.

3. *Rhinoceros bicornis* (Linn.).—Native name "Faroo." This was found on the route between Ugogo and Karagweh. Its horn is of no value; we never took the trouble to cut it off the animal, as we could not carry it. Speke shot the first by moonlight at Ugogo; our men had difficulty in procuring any of the flesh, as the natives ate every bit of it. One bullet, if placed behind the shoulder, was found to be enough. They were frequently observed to have died in the posture of a hare, seated in her form. We have seen during a march in Usui as many as eight or ten feeding separately in the valley, with hartebeest and other antelopes about them; but as our men became tired of their flesh, we seldom wasted powder on them. In such open ground they will allow a person within 100 yards without alarm, receive the bullet, and rarely charge when wounded. They trot off with cocked tails out of sight, and never were observed to canter; but, in cover, they have frequently made feints at charging.

4. *Rhinoceros simus* (Burchell).—"The white two-horned rhinoceros is found in Karagweh, where several specimens were shot. It is larger than the *bicornis*,"—J. H. S. The enormous length of the first horn, the flat and non-prehensile upper lip, and the difference in the skin, distinguish this animal at once; but it was rare in comparison to the other. At Delagoa Bay we saw a horn upwards of a yard in length.

5. *Phaechoærus Aliani* (Rüpp.).—The native name of "the pig" is "N'grooweh," "N'geeree," and the boar is called "Toomba." We saw several species, but this wart-hog has been identified by the skulls of both sexes which we sent home. They are as swift on foot as an Arab horse, and dart away with their straight tails erect. The females have immense tusks also.

6. We observed the red hog as well as the grey grizzly one. The pig was not domesticated on any portion of our route, whereas it is so mentioned in Dr. Livingstone's account (dated

February, 1872) of the Manyema country, on the Lualaba, at 4° s. lat., and about 25°-26° E. long.

7. *Hyrax*.—At Ukuni, in August, shot two young hyrax. Also saw in rocky ground a number of them three times the size of our hare. One specimen brought me at Ukuni was rabbit-coloured, rather rat-headed, hare size, feet-pads like a mitten, with nails like monkeys. The natives would not sell me this specimen, nor allow me to skin it. They were to eat it themselves, and keep the skin.

8. *Horse*.—It may be mentioned as strange that there is not a horse in the whole range of country we traversed, although we know they are used by the Galla and other tribes to the north-east of Victoria Nyanza. One had been taken from the East coast by an Arab, as far as Uganda, but he died like all the mules brought by us from the Cape of Good Hope. They die, I believe, from want of proper food and care.

9. *Ass*.—"Phoonda." There is a wild species in the Nubian desert, but we did not see any, and a river is called, after them, "Wudi Himar," the River of the Wild Ass, at 18½° N. lat. The animals we took with us from Zanzibar stood the journey pretty well; one of them had been with Burton and Speke in the Tanganyika journey, but was brutally killed by the natives upon our journey. During the march we have seen the wild zebra and our laden donkeys recognise each other. The twelve mules we took with us from the Cape all died from disease before reaching Kazeh; they were not so hardy as the donkeys. On the march they had to be urged on, and the symptoms of sickness were closed eyes, distended nostrils and windpipes, weakness in the limbs, distressed breathing through the mouth, accompanied by a hard round swollen tongue, their blood turned into water, which oozed from the pores of the skin and from the tail, when we cut it, in order to try and relieve them by bleeding. But all remedies failed.

10. *Equus zebra* (?).—Native name "Phoonda." This animal was frequent in Ugogo, Unyamezi, and north of Uganda. He differs from the *Equus Burchelli* of Regent's Park Gardens in being larger and differently striped. The stripes of our zebra were black, upon white (not yellow) ground, and extended to the hoofs, whereas Burchelli has broader stripes, yellow ground, and the stripes on the legs are few. However, a sketch of an old mare shot by me shows the same black muzzle and hog mane as Burchelli, and Mr. Blyth says my sketch is of this last species. Foals were running after their mothers in December. We heard them calling, and the note was like that of a bird, with the addition of the rough notes of the donkey's bray. We and our men ate their flesh and sun-dried it; but it was very horsey-tasting and

smelling. The natives invariably stole the testicles of all animals, for they thought there was a virtue in eating them.

11. *Camels*.—There are a few sickly-looking Arabian camels, or dromedaries, on the island of Zanzibar, where they may be seen turning oil and flour mills; but from the east coast, all the way north to Gondokoro, there is not one kept in the country, though the greater part of it is perfectly suited for this animal. I therefore hope that he may be introduced early by future explorers, for the giraffe thrives there, and the Nubians, the Abyssinians, and Somali have this animal in thousands; and he is just the animal for an African, as he requires little care, keeping himself; besides which, in a country where the traveller is detained months for want of porters, this animal, as a beast of burden, would be invaluable to him.

12. *Camelopardalis giraffa*.—Native name "Tweega." Troops of this wild creature were met with at various points of the journey wherever the forest was flat, dry, tolerably open, and wooded with acacias. One full-sized male, with two stumps of horns, was shot with one small Lancaster bullet. They were seen most frequently during the months of November and December. Every morsel of the animal was eaten by our native porters, and the skin was made by some into sandals. The long straight hair at the tip of the tail is valued for stringing Venetian beads, and iron wire is twined round the hair to form necklaces and anklets.

13. *Ariel* were seen at 18-19° N. lat., in small herds of five and six, on the sandy desert, where nothing green was visible.

14. *Gazella Granti* (Victor Brooke).—For figure and description *vide* 'Proceedings of the Zoological Society,' 16th April, 1872. Speke shot male and female on the 30th of November, in Ugogo, and we both sketched them as new species. They were shot again in the same locality—a sandy plateau, covered with salt plants, bushes, and a few trees—seen in small herds. Fur a dirty yellow above and white beneath, pointed ears, black patch on bone of nose. Male horns 26 inches long; females 15 inches.

15. *Tragelaphus sylvaticus* (Sparm).—The head of a young male. "The bush-bok frequents the thick bushes in the countries we traversed, from Unyamezi to Madi. It is usually found singly, and makes a bark when suddenly disturbed."—J. H. S.

16. *Tragelaphus sp.*—Native name, "Phongo;" but in Uganda it is called "N'gubbi." Ukuni, 4° S. lat. Killed with shot a hornless female antelope. Fur of the lightest bay or red colour; weight, a man's load, say 60 to 70 lbs.; hornless, and with four teats; head lean, ears large and rounded; four scars of white across its saddle part; white spots, more or less in lines upon its sides; tail a large tuft, bright bay above, white beneath, and

ending dark. The legs, particularly the fore ones, were patched inside with white; feet very beautiful; a patch of white is on the skin above the front of the hoofs, and this specimen had a white patch in front above his chest on the windpipe, and a collar of hair had been rubbed off all round its throat; ridge of the spine white. It proved a heavy load for my guide, as it was in young. The male of this species has a horn of 12 inches long; three-cornered with half a turn outwards, and slightly barred.

"I was delighted to get it, as my larder was completely empty; but it was not fated that I should enjoy it. My guide refused to carry it into the village where I lived till he had obtained permission from the Sultan, because it was an unwholesome animal—a beast, that if he spits at you the place becomes a sore, and if you eat it, your fingers and toes drop off from leprosy—you will have scab. In fact, it was a 'Phongo' (Kin.), and the Sultan would not allow even its skin within the palisade. I therefore made a careful sketch, and these notes upon it; but some travellers passed during the day and took away the meat. In Heceo this animal is called 'Bawala,' and it is not eaten there either." It would be interesting to know what cause there is for this native superstition.

17. *Tragelaphus Spekii*, *sp. nov.*, pl. XII., 'Proceedings of the Zoological Society,' 1864, and plate also in Speke's 'Journal of the Discovery of the Source of the Nile.'—This antelope frequents the beds of papyrus in the borders of the lakes of Karagweh. King Rumanika, of Karagweh, ordered his boatmen to catch me a specimen. They procured me a young male alive, the skin of which I brought home. I kept him some days alive, feeding him on papyrus-tops, the only thing he would eat. He was very awkward on the hard ground, his long toes being evidently only adapted to carry him among the swamps. The king also gave me the horns of an adult of this antelope (which are, I believe, in the British Museum). The skins of this animal are highly prized in Karagweh, Uganda, and Unyoro, and are worn by the kings and their officers.—J. H. S.

Before reaching the Lake of Karagweh, where this animal was found, the natives of Kazeh told us of it, describing it as living in water like a fish, having horns and long hair like a goat, and we had difficulty in making out what animal it could be. This specimen is now stuffed in the British Museum. Native name, "Nzoweh."

18. *Neotragus Saltianus*.—The figure of this species in Rüppell has spotted legs, but this character was not observed in the specimens shot. My notes state,—“November 18, 7° s. lat. Shot an old female hornless antelope, weighing eleven pounds—native name, 'Soo-eca,'—deer colour, white beneath, four teats,

short tail, and a tuft of long erect hair on the forehead (my sketch is the same as Rüppel's). It squeaked very much in being knocked over with shot. It had a companion." Again journal of 18th December: "Shot a male *Salpima* with three-inch long horn; I forgot to take out his testicles, so the meat smelt of musk."

19. *Calotragus* sp.—Thought by Speke to be *C. melanotis* (Thunb.); native name, "M'Kosseh." My journal states,— "October 22nd, $2\frac{1}{2}^{\circ}$ s. lat. Shot a small buck antelope, with red fur mixed with grey hair; horns two inches long, small, smooth, and pointed; weight sixteen pounds. The chief of the place requested to have its skin; he got it, and a fore quarter besides."

20. *Nesotragus moschatus* (Von Duben).—Specimens of this little antelope were obtained by Captain Speke in the island of Zanzibar; these are now in the British Museum.

21. *Scopophorus montanus* (Rüpp.).—Karagweh. Imperfect head of male. Shot on the mountains in Karagweh, where it is not very common, moving about in small herds.—J. H. S.

Sketch of its horn by Speke is in R. G. S., "male horn; Karagweh."

22. *Heleotragus reduncus* (Pall.).—Captain Grant shot the only example of this antelope we obtained, in Usagara.—J. H. S. Shot this Reh-bok November 4. He was one of seven or eight. Sketch of head in R. G. S.

23. *Cephalopus mergens* (Duyker bok). Sketches and long notes on male and female in R. G. S. by Speke. Shot.—J. H. S.

24. *Kobus leucotis* (Licht. et Pet.).—Uganda 1° s. lat. Three heads in British Museum where it is also called *Adenota leucotis*. This antelope, of which the native name is "Nsunna," is found in Uganda, Ungoro, and Mudi, but never south of those countries. They roam about in large herds in thick bush and grassy plains, but never go far from water.—J. H. S. Speke's male specimen is in the British Museum.

I consider this one of the most beautiful of antelopes. Its fur is a bright bay. Several were shot, and afforded great excitement to the Waganda, as the skin is so much prized. Most of them were shot while grazing in aquatic vegetation, and we had to wade up to our knees to get them. One fine buck, killed on August 22 (and another on the 16th, with $13\frac{1}{2}$ -inch-long horns), was carried by eight men (Waganda) bodily out of the water, so that no hair of his skin should be spoiled. Their chief was to have the skin. A hornless female, in young (July 14), was shot in same locality, at $1\frac{1}{2}^{\circ}$ s. lat. This animal is larger than the Indian black buck, has a bright bay skin, very furry, white bottom, and belly without either spot or streak, black

legs, white circles above its hoofs, and black upon the tips of its ears. Speke's sketch and notes in Royal Geographical Society give some further information. "N'sunnu of Uganda, July, 1862. Thin tail, ended with black in small quantity, belly white, back red, spotted with white points like face and legs; front of fore leg black all the way down, but hind one only half way, from hock down; white points are all over the animal."—J. H. S.

25. *Kobus Sing-sing* (Gray).—Captain Speke brought home two heads of males of a large species of antelope, which is apparently not different from the sing-sing of the western coast. The general aspect of the head resembles that of *K. ellipsiprymnus*, but the face is blacker, and the top of the head between the horns dark rufous.—P. L. Selater.

"The Nsumma antelope was only met with in Uganda and Madi, where it lies concealed in the high grasses in the daytime, and comes out to feed in the evenings. The males are often found singly, but the females in herds. It does not possess the lunate mark on the rump of the water-bok, and does not stand so high, but is rather more stoutly built."—J. H. S.

I have examined the female sing-sing in the Regent's Park gardens, and find its aspect similar to the animals we shot at 2° S. lat., but there is this remarkable difference that, though I handled the animals we shot, there is no note by Speke or myself of the glycerine-like substance which oozes from the skin of the Regent's Park sing-sing, and I am inclined to think them different. Also the following note in Royal Geographical Society by Speke shows a peculiarity in the marks: "N'samma doe of Uganda, a coarse, heavy animal, the size of a sambar, with ruddy-brown-grey coat, but belly tinged with black; has a head like sing-sing, but with white on the jaw instead of the throat, and no horns; front of legs and all four extremities below knee black, saving white circles above all the hoof horns; tail thin, and dark-tipped, hinder part of hams white," *vide* Speke's sketches of its head and leg in the R. G. S.

26. *Kobus ellipsiprymnus* (Ogilby).—"Uzaramo." Heads of three males and three females of this antelope. Speke's specimen of male is in British Museum.

This fine antelope is very numerous in Uzaramo, frequenting the jungle along the banks of the Kingani River. The lunate mark on the rump is very distinct in the living animal. The does and young are met with in considerable herds; the old bucks singly, or in twos and threes. After crossing the hill-range we saw no more of this species.—J. H. S. In November, near east coast, shot a large female in milk (? hornless), four teats; fur dark brown, throat shaggy, legs thick, a goat-like

animal, but with a peculiar-shaped mark of white on the bottom.

In the same month, and near a river, shot a fine male, larger than our donkeys. Fur brown, mane shaggy; elliptical mark all round the rump; tail 10 to 12 inches long, tapering; hoofs very large, and the upper toes pretty close to them; horns barred across, and drooping forward. I cut him up, and five men carried home the meat.

27. *Kobus* sp. (?).—Uganda. Imperfect head of female, probably of a species of *Kobus*. Native name "Ndjezza."

The "Ndjezza" is found among the grasses near water in Uganda. I never obtained the male of this antelope.—J. H. S.

Speke's journal, &c., dated July 17, states, "During a halt shoot a 'Ndjezza' doe antelope, the first I had ever seen. It is a brown animal, a little smaller than the *K. leucotis*, and frequents the same kind of ground." My journal of the following day states on this: "Last evening Speke shot another antelope (female), which we do not know, but the Waganda call it 'Njezza,' about as large as the Indian black buck, and of a dusty red colour, no spots nor streaks; rather bushy tail. The horns of the male are said to be 8 or 10 inches long, growing forward in a sharp curve.

28. *Hippotragus leucophæus* (Pallas).—Native name "Kolongo," or "Kirongo," the Blane-bok. Sketch by Speke in the collection of the R. G. S., "drawn to show the contrasting black and white, &c." "Found in considerable numbers in swampy ground near Kazeh. The specimen, of which I brought home the head, after being wounded by my rifle, was pulled down at night by lions, so that I got it in the morning."—J. H. S. Its spoor is remarkable, and often tantalized us—it is peculiarly heart-shaped and large. The fur was a mild red, or bright sandy brown. In size he was nearly as large as a horse, with immense, heavy head of horns curving straight back, with two white marks upon the face. At 3° s. lat., on November 17, saw fifteen of them, also ten giraffe and some hartebeest.

29. *Hippotragus* sp. (?).—Native name, "Palembo." Saw its immense horns, nearly of uniform thickness, not graceful, growing straight back in one curve over the neck, and remarkably wide between their tips; the distance between the tips is about equal to their length. The old hunter who showed us these horns said that every inch of this "Palembo" was black, and to show his size he held his hand as high as he could reach. I saw this large black antelope one day with six zebra, and he was a hand taller than them.

30. *Hippotragus niger* (Harris).—Called "Pallahalla," in Unyamezi.

Captain Speke has also brought home the head of a young (male?) antelope, which Grant shot at Ukhutu, under the east-coast range. Dr. Gray has kindly examined this for me, and determined it as referable to this species. Ex. Journal, October 28, 1860: "Had one shot, and bag a beautiful red, fat, little bull, three or four months old. Not the least like an antelope," &c. Ex. Field-book, same date: "Go shooting from 5.40 till noon over a hilly country, with fragments of quartz cast over it, and trees; had one shot, and kill fine calf of — antelope, more like a common bull calf than an antelope; but he had short tail and trace of a black mane; no stripes on bottom, and rather pointed ears." The horns of the "pallahalla" have a clumsy, abrupt taper, are straight in their bend, and ringed across.

31. *Strepsiceros Kudu* (Gray). — Native name, "Tandalla." The Koodoo was met with in Ugogo and Useke, though no specimens were obtained; but I am certain of the species.—J. H. S. In the Ukuni district during July, while shooting, I saw a herd of this spiral horned antelope, and the tracks of buffalo and elephant. I also saw the natives drying the skins of zebra they had noosed in this forest.

32. *Oreas Livingstonii*, sp. nov. (?).

"Captain Speke met with a small herd of about a dozen elands at Inenge, in Usagara. He describes them as 'head and horns like the common eland, but more rufous on the forehead, with black points and a broad black band strongly marked on the hinder part of the fore legs, just above the bend of the knee.' His figure represents the animal as having a very distinct black dorsal band, and seven or eight white cross stripes across the flanks. I have no doubt this is the same northern species of the eland (*Oreas*) as that described in Dr. Livingstone's Travels.

"Dr. Kirk informs me that he met with this eland on the left bank of the Zambesi, in the neighbourhood of the Kafue, a large tributary of the former stream, and that it is readily distinguishable at first sight from the common eland (*Oreas canna*) by its striped flanks. I think there can be no doubt, therefore, as to its being a distinct animal; and I propose to name it after its discoverer, *Oreas Livingstonii*."—P. L. Selater. The skin was sketched by both of us, and is rufous red, with the spinal ridge black, slight mane, tail tip a bush of black hair, brisket black, seven to eight white streaks run with the ribs, the longest ones towards the shoulder.

33. While in Ugogo, I had a shot at a new deer, which looked, at two hundred yards' distance, to be a giraffe; the colour was that of a camel; stalked and had shot at 50 yards. He had white streaks running with the ribs, and was rather high-

shouldered. The spoor showed him to be rather round-hoofed, but it was smaller than that of the sable antelope. We tracked him for three hundred yards and lost him. It was curious to observe that he had ascended every mound to look and listen whether he was being followed. Native name in Unyamezi for Eland is "Neemba," and in Uganda, where we saw a pair of immense horns in a hut, he is called "M'Tengo." The only one shot was *O. Livingstonii*, a female with straight horns, having one spire.

34. *Æpyceros melampus* (Licht.).—Uzaramo. Two heads of males in British Museum. Native name, "Pallah." One of the commonest antelopes in Uzaramo and along our route up to Unyamezi. They roam about in large herds, frequenting open parts of the forest.—J. H. S. Also shot two out of a gale of forty. Horns like a pitchfork, and flush with face; fur of back red, belly white, black stripe down rump, black-tipped ears, and small black spots of hair covering the upper small toes; about black-buck size. This antelope is called "Swallah" in Unyamezi, and "Pallah" in Ugogo. Sketch by Speke in collection of R. G. S.

35. *Boselaphus*, probably *B. Lichtensteini* (Peters).—Called by Central Africans "Gnamaera," of which we saw many in several localities. On November 19, while on the march in Usui, in a dry, flat plain, saw four rhinoceros. Speke had a shot, and so had I; then saw two more, then two or three others—in all fourteen rhinoceros, with the whole plain dotted with hartebeest. Our caravan, or line of men, approached within two hundred yards of these rhinoceros, who showed no fear, though in the open, grassy plain without a tree. One fell dead, but the others we wounded (four or five) ran till out of sight—except one, which joined a party of giraffe and hartebeest. We here saw a splendid fight between two male hartebeest, who had regular rounds, halting for breath, and then going at each other again, neither giving in, though the force they exerted in butting sent them both upon their knees, and their tails flying over their backs.

Hartebeest we found to be very wild, and difficult to stalk; their habit was to run for a hundred yards in part of a circle, and then walk, so that a near or standing shot was rarely to be had. They were red, lanky, unshapely brutes.

36. *Boselaphus caama*, called "Kongoni" by Wanyamezi, and also "Gnamaera."—A coloured drawing of its head was shown to an old native sportsman, who recognized it as this species.

37. *Boselaphus bubalis*.—Speke's note on this species (in R. G. S.) states, "Cream coloured, seen at —, if he has a black patch on the flank."—J. H. S.

38. *Oreotragus saltatrix* (Klipspringer).—On January 3, 1861, amongst masses of outcropping granite boulders, I start two of this species. They spring off with a bark, and halt with a spring partly hidden by a bush. They were wild, running short distances over rock of extraordinary inclination, looking so game and pretty—reminding me of the Himalayan chamois or “goorul.” Killed a female (with young one, January) and sketched its hornless head, and pinched-in hoofs of remarkable length. Fur, plover-green, crisp or brittle like the “burrell,” or wild sheep of Thibet, and very thick, like that of the musk-deer of India. This little antelope affords great pleasure if watched in its native state, it is so wild and nimble in going over rocks.

39. *Catoblepus gorgon* (H. Smith).—Native name “Yoombo.” This Gnu was found in large herds in Khutu, in the western borders of Uzaramo. It inhabits the park-like country adjoining the River Kingani, and was not seen after crossing the east coast range.—J. H. S. We shot and photographed them, but they are very wild, not allowing me to get nearer than 400 yards, when they would turn round for a moment, switch their tails, and be off again in a mad-like canter. On the 17th October saw two bulls fighting furiously.

40. *Domesticated Goats* were found all along the route; the smooth-haired, short-horn, and straight, erect-eared breeds of every variety of colour. Their skins are universally worn; those of the kids are sewn together into a handsome robe by the Waganda. In Egypt we came on the long-haired, long-eared breed, and Speke has a sketch of the long-haired goat of Usoga in R. G. S. collection. The native name is “M’boozee.”

41. *Sheep* (native name “Kondoro”).—The breed in Central Africa have no wool; as the skin is thin it is of little value, and few are kept by the natives. They are stupid-looking brutes, shaped between a dog and a calf, with drooping head, small hanging ears, dewlap, and two hanging bits of skin on the throat; tails broad at base, and tapering to a point; colour varied—bay-brown, white, black, and black-and-white. The average price of one is four yards of American sheeting.

42. *Oxen* (native name “Gnombeh”).—We saw two distinct breeds of cattle, the ordinary humped small bull of India and the Galla cattle of Abyssinia. The former extend from the coast to Karagweh, where a nomadic people begin, and are of every variety of colour, pure white with black spots, piebald, skewbald, red, black, &c., with small, straight or crooked horns. The Galla oxen, brought may-be from Abyssinia, are tall, lanky brutes, poor milkers, with immenso long horns and almost humpless. To the north of Uganda we saw herds of several hundred hornless grey cattle with

black faces, black inside the ears, and little or no hump, almost prize animals and very docile. We were informed that the Wanyoro amputate the horns of their cattle with a red-hot iron, and, though we did not see the operation, nearly all the cattle were hornless on the Uganda frontier, and a young cow had a scarred sore from having lately been operated upon; I therefore believe that this is universally practised. Nowhere was the ox used as a beast of burden or of draught, it was solely used as food, and its skin as a robe for women chiefly, until we reached Uganda, where cow-skins, handsomely prepared, are worn by all the men. I have seen the Wakidi eating raw meat while cutting up a cow, and they thought this warm raw flesh more digestible than if cooked. They wear the fat in a coil round their necks, and use it as they may require for eating or smearing their bodies. On no occasion, either on this journey or afterwards with the Abyssinian army, have I seen a bit of flesh cut from the living animal.

43. *Bos Caffer* (native name "Bogo").—Met with wherever the grass is sufficiently heavy.—J. H. S. This animal is not domesticated as the species of India is. The dimensions of the largest specimen measured are as follows:—

	ft.	in.
Between tips of horns	2	4½
Inner length of horn from crown to tip of horn ..	2	2
Greatest circumference	1	8½
Distance between bases of horns	0	1½
Length from nose to top of head	1	9

It is a fierce animal, affording excellent sport and food. The natives capture them alive in foot-traps attached to logs of wood, or they (the Wagani and Wakidi) steal up to them and spear them while asleep.

44. *Manis Temminckii* (?).—A living specimen was seen with Egyptian traders at 3° N. lat.

In Central Africa its scales were observed worn as a charm; they were 3 to 4 inches across, and lined or combed at one end. The people say "he who possesses one of these animals would have great wealth," meaning that each scale is marketable. Dr. Kirk mentions that its scales are worn as "fetish."

45. *Lepus* *sp.*—The hare of Central Africa is smaller than the English, it runs more like a rabbit, and its ears are disproportionately large.

46. *Hystrix* *sp.*—The quills and holes of porcupines were constantly met with, and when we arrived in Uganda territory we found the people hunted them with dogs for their food, digging them out of their earths.

47. *Grass rat*, living in the huts with lizards, both of

which are abundant in Unyoro. It feeds upon vegetable diet entirely, and has the appearance of a half-grown rat. These rats are very tame but wary of traps; they live in holes. The natives of Africa who have not been to the coast will eat rats. I asked four of our followers whether they had tasted them; all replied that they had, adding that the flesh was sweeter than fowl.

48. *Euryotis* sp.—Imperfect skin, Unyamezi. Lives in houses like the common house rat of this country.—‘Proceedings of the Zoological Society,’ 8th March, 1864.

49. *Aulacodus Swindernianus*.—A head of this from Uganda. This animal was given to me alive by the King of Uganda. I never met with it in a wild state, though it is commonly caught by his hunters for the royal table.—J. H. S.

50. *Golunda pulchella* (Gray).—‘Proceedings of the Zoological Society,’ 1864, p. 57, pl. xiii. Common in Unyamezi. Coloured sketch by Grant in the collection of the R. G. S. Seen also in Usni. “A striped field-mouse.”

51. *Georychus pallidus* (Gray), sp. nov.—Mole-rats, swarming at an altitude of 4500 feet, where our camp was pitched at Karagweh, near some wild fig-trees. Their fur was remarkably close and thick, and varied in colour, from black to brown-and-white. The *Georychus* is considered a fetish animal by some of our followers.

52. *Georychus albifrons* (Gray), sp. nov.—Fur ashy grey, with a large white spot on the forehead.

53. *Bathyergus* sp.—Speke’s coloured sketch in the Royal Geographical Society much resembles Peters’ illustrated species of this, but Speke’s figure has a straight tail an inch long.

54. *Jerboa* (killed 22nd October, 1861, with the heel of my shoe).—Bottle-nosed, with long hind legs of fur, pretty pinched-in toes; size small; colour that of an ordinary rat.

55. *Sciurus ornatus* (J. E. Gray).—‘Proceedings of the Zoological Society,’ 1864, p. 13, pl. i.

56. *Sciurus flavivittis* (?).—25th October, 1860: “Shot a small squirrel with white longitudinal stripe along each upper side. I found it up a tree in Usagara.” I have no doubt it is this species figured in Peters’ ‘Mozambique.’

57. *Sciurus palliatus* (?).—9th December, 1860: “Saw a neat little squirrel of the ordinary colour. I suspect it was this species figured in Peters’ ‘Mozambique.’”

58. *Dogs* (called “M’bon”).—The breed commonly seen is the Pariah of India, either red or white, very rarely of two colours, but the African animal was seldom heard to give tongue. They are affectionate, and will whine if their master be away. The Waganda are passionately fond of dogs, which they steal or even buy for 300 cowries, and lead them about

wherever they go, carrying them on their heads across streams and hunting with them. They, and the people at Karagweh, geld their hunting dogs. A coloured sketch, by Speke, of a dog is in the collection of the R. G. S.

59. *Foxes* were heard often at night, and our followers thought their bark an ill omen. Saw one the size of a jackal, which Speke called the "Silver Fox." He had a remarkably graceful figure, with long neck and long black elegant tail. General colour was dark, but in the dusk he seemed to have a white chest. His bark was like that of a small dog.

60. *Otocyon Lalandii* (Smith).—Shot in Ugogo, while foraging alone in the jungle.—J. H. S. Sketch by Speke in R. G. S. "Bitch fox in milk; shot Ugogo, Nov.; weight, $6\frac{1}{2}$ lbs."—J. H. S. Fur a mottled mud colour; muzzle, paws, and tail black; ears long, erect, coarse, and tipped with black.

61. *Felis Leo* (Linn.).—"Lions were abundant all along the route we traversed, though not often met with. In Uganda, in particular, there were many complaints of their ravages."—J. H. S. The natives kill them in traps made so that a number of logs fall and crush them; but, while at Karagweh, the King ordered us not to shoot at them, as he considered them to have grown from woras out of the bodies of deceased kings, but this restriction did not exist where this Wahuma race were not in power. For instance, in Unyamezi, the Sultan encourages the killing of carnivorous animals, and when a dead one is brought in there is great rejoicing; all the fat is preserved as medicine, or used in making brotherhood, and the paws, jaws, and tail of the animal are tied over the doorway of the Sultan, who alone is allowed to wear its skin. Many instances of cattle and men killing were seen or heard of.

62. *Felis sp.*—The skin of a leopard was brought for sale at Mininga, on the 12th April, 1861. The spots were of the ordinary shape, but jet black and shining.

63. *Felis serval*.—"The Princes of Uganda wear the skin of this animal as a royal badge. This kitten was given me alive by a native of Unyoro, under the condition that if it died the carcase was to be given back for his dinner."—J. H. S. The Sultan of Karagweh sometimes wore the skin of a cat, the fur of which was thick and handsome, with dark lines at the back of the neck, then spotted all over.

64. *Felis sp.*—One evening, at Kazeh, a wild cat, the size of our tom cats, bounded before me through the bush; he had a barred skin and tail. Again, at Ukuni, a similar animal was observed one morning with deep brown bars upon its body.

65. *Felis chaus*.—"Found near Mininga, concealed in a rut on the road."—J. H. S. At Ukuni the village drums always

beat the assembly on the arrival of any animal of the feline order. A lynx, known to kill cattle, and even buffalo, was carried into the village by two men on a pole. He was no longer than our English fox, but of a reddish dust colour, with indistinct spots; head that of a perfect cat, white round the eyes and on the belly; tail remarkably short, stumpy, and, in death, curled over the back like that of a cur dog; legs stout and thickly furred; ears tipped with black hairs, and black in colour with a mixture of white. On his arrival, the Sultan, his Sultana, and a second wife, sat round the dead animal with the people around them, a lump of serpent's dung was rubbed with water into a paste, which the Sultan spotted himself with and his two wives on the forehead, chest, tip of shoulders, insteps, and palms of hands. This concluded, dancing is kept up for several hours.

66. *Hyæna crocata* (native name "Feessee").—Shot a male in Ugogo. They are numerous, daring, and troublesome, seen and heard constantly, running up howling at us even during the day, looking in upon us during night, and stealing the best of our goat by breaking into our huts; but, though bold, this animal is cowardly, and will not attack cattle, as he is afraid of being kicked or tossed by their horns. His general colour is dingy mud, with very indistinct spots on the body and still fewer upon his legs. The muzzle is black, the mane long and mud colour, with black-tipped tail. He had two large mammae, no testicles externally, and the penis is altogether sheathed. His gait is waddling, and he stands much higher at the shoulder than behind.

67. *Herpestes badius* (Smith).—"Seen singly in the wilderness of M'Gunda M'Kalee, on the ground."—J. H. S.

68. *Herpestes fasciatus* (?) (native name "Goozeeroo").—Saw a troop of them at Ukmui. Shot one with bullet, and another was tearing at the entrails of the dying one when I got up. The whole body and tail was barred across with black.

69. A small red weasel-like animal was observed in Ugogo.

70. *Lutra sp.* (native name "Gonjeh,"—Kar.).—Otters are in the lakes of Central Africa, and the king of them, a grey furred one, is said to live in the Karagweh Lake; but the common otter is said to have black fur. In Abyssinia, those who are allowed to wear its skin are men of rank, similar to our knights.

71. *Megaderma frons* (Geoffr.).—One dried specimen. "This bat was shot flying at Mininga. They were numerous, but rose singly from the ground and alighted sometimes in bushes, sometimes again in the grass."—J. H. S.

72.—*Scotophilus sp.*—One example in spirits of a bat which Dr. Gray identifies as a species of *Scotophilus*.

On the 11th August, in the forest of Ukuni, I started a yellow bat out of the trees.

73. *Cercopithecus* sp.—An imperfect skin of this; indeterminate. “Tumberi monkey. Numerous in the forest near the coast in Uzaramo.”—J. H. S. This specimen was a young one, purchased 13th October, for 3 yards of cloth, from a native. Saw several in the forest, where the people hunt them with dogs, but they do not eat them here, though the Wasoombwah, south of Ukuni, do eat them.

74. *Colobus*.—In Uzaramo, observed monkeys, like the Indian lingoer in size and appearance, taking canters in the forest, then stopping in a daring manner. A shot or two made them stand up like men.

75. *Colobus guereza* (?) (Rüpp.).—The tippet monkey was never seen alive, but in Unyoro we saw its skin worn by porters, and there is no doubt that it extends from the East coast to 4° N. lat. They are said to be numerous on the seaboard (M’rima). This beautiful animal is said by the natives to argue thus: “People kill me for my skin because it is pretty, but I harm no one, I eat no one’s grain, my only food is the surfaces of perfectly entire leaves, so why kill me?” It is said of him that when wounded he tears out the long hair of his mane on purpose to destroy his skin! He is not called a monkey (Tumberi), but by some other name.

76. *Arcopithecus* (?).—On the left bank of the Nile, at 2° N. lat., we saw monkeys jumping from tree to tree. They were 16 (?) inches high, had long tails, grey backs, light bellies, black faces and ears, with white beards and eyebrows.

At Madi, in December, while shooting over rocky ground by a stream, some lingoer disputed the position with me, barking angrily; they had black faces and bushy heads of hair. A fortnight afterwards, in the same locality, saw a herd of barking, red-bottomed monkeys, called “Yanee,” which my guide told me would return a spear if thrown at them.

Monkeys are a great nuisance when shooting, as they always pass the word of alarm to antelopes and other wild animals. We heard of people who dwell in trees in the country to the west of Karagweh, and imagine that the gorilla was indicated, but we never saw this animal in the land of the Nile.

X.—*Notes on the East, North-east, and West Coasts of Yezo.*
By Commander H. C. ST. JOHN, R.N., H.M.S. *Sylvia*.

WE left Hakodadi on July 28th, 1871, beating westwardly; but owing to the strength of the current (averaging 6 knots) on the 30th found ourselves one mile to the east of our starting-point. Having refilled with coal we started again from Hakodadi and proceeded east, passing Cape Yerimo during a thick fog, the ship drifting westward about one mile per hour, and on the 3rd August anchored in Akishi. Started early on the following morning, and reached Nemoro the same evening.

Left Nemoro for Shibets. As soon as Notski Spit was reached, the ship being on new ground, I carried a line of soundings to Shibets 16 miles from east end of spit, keeping close to the Yezo shore. I believe, however, there is a channel, with 6 or 7 fathoms in it, farther out. Shibets is the last settlement previous to rounding the north-east cape, Sirotoko. At this place there are 280 Ainos and 50 Japanese; salmon fishing is carried on, but no cultivation is attempted.

At daylight on the 8th we proceeded west to Abasiri, rounding Cape Sirotoko, whose real position is about 30 miles south-east of that shown on the Admiralty Chart. At Abasiri a considerable river runs into the bay, the country round is covered with wood, principally deciduous trees. The settlement is composed of about 150 Japanese and Ainos engaged in salmon fishing.

Reached Mombets, a small fishing-station (about 54 miles W.N.W. of Abasiri), on the 10th, and Cape Soya on the 11th, where we anchored off the settlement, outside the reefs, which extend a great distance along the bay, but not far off shore. The remains of the *Rattler* were still visible.

Left early on the 12th and proceeded to Risiri Island, intending to remain there until the south-west wind blew over. The water for a considerable distance off Cape Nossyab was much discoloured, and 5° less salt than the pure sea water; evidently influenced by some large river.

Quantities of drift wood, trees, and refuse, were floating in the discoloured water, and particularly along the line of contact, doubtless brought down by the river from inland. The south-westerly wind dying away, and the weather generally clearing up, we proceeded on, passing Taruri sands at midnight, and arrived at Otarunai at 1 P.M. on the 13th.

Otarunai is the port for the Iskari salmon fishery; about 6000 tons of this fish are dried and shipped for the southern

ports. Herrings are dried and boiled down for manure. The bay is capable of being turned into an excellent harbour, by means of a breakwater, stone for which abounds in the locality. Iskari is a settlement about 13 miles east by water, and 20 by land; situated at the mouth of the largest and finest river in Yezo, of the same name; measuring from 200 to 300 yards in width for a considerable distance, with about 10 feet of water on the bar; inside, and along the sandy bank of the river, there are 6 or 7 fathoms.

Satspro, the new capital of Yezo, at present consists of about 100 wooden huts or houses. It is 24 miles south-east from Otarunai, and 20 miles south of Iskari. It took me 4 hours to go from its situation to the river by boat, down a partially natural and partially artificial stream. A new road is being made to Endermo Harbour. The country is perfectly wild, and entirely covered with fine timber, hard wood, oak, etc. The soil is rich, and the lower slopes of the hills well adapted for agricultural purposes. Almost anything would grow and flourish; potatoes, beans, millet and wheat, are already grown in small patches of ground in the villages.

We left here on the 22nd and proceeded round the coast to Iwani, passing a fleet of over 100 junks, bound south, laden with fish; there were as many more at anchor in the bay, and a number at Yoitehi, 10 miles west of Otarunai.

The coal mine at Iwani is still being worked by 80 hands, and appears to have been open about five years. I do not think it can ever pay, there being no means of getting the coal away. The tramway is in good order, and small quantities are shipped off in junks when opportunities occur and weather permits. The bay is entirely open to the southward and westward, and there is no indentation, or bay or creek which could be formed into a harbour, however small. A few junks were squeezed in between the rocks in one or two places, but they draw little water, and make fast to the rocks; neither are they particular about being bumped a bit.

We left at 7½ P.M. for Hakodadi, and arrived there on the 24th.

In the south-west parts of Yezo I feel sure anything in the way of agriculture would answer well; the growth of wild plants, and particularly grasses, is marvellous. There are situations about Otarunai, Iwani, and Satspro well adapted for grain. The little wheat that is grown is cut before the middle of August. Several kinds of roots answer well. Wood and good-sized timber abounds, both hard wood and pine.

The north-east and east coast I do not think would answer

for farming purposes, being washed by the cold stream from the north. Fish and timber exports, however, would both pay along this coast.

The summer months are short, and the sun is generally obscured by fogs.

The west coast is under the influence of the warm stream; the east, north-east, and south-east, as far west as Cape Yerimo, under that of the cold.

Coal is found on the surface at Samu, Sutsini, and Siranoki on the south coast, and Uromoki on the west coast; but worked only at Iwani, west coast; other minerals are said to abound. If they do, the Japanese alone know of their existence.

Want of harbours, or even anchorages, is the great drawback to Yezo. The extent of coast line is about 1000 miles, and along the whole of that distance there are only Hakodadi and Enderino on the south-west, and Akishi on the south-east, that can be called harbours. Hamanaka is an anchorage, Nemoro is but an anchorage, and from Nemoro to Otarunai, a distance of 420 miles, there is nothing in the shape of a harbour. A vessel may anchor at one or two places, provided the wind is off shore; under such circumstances little could be done in the way of exportation should the island become of any importance.

Otarunai is at all times safe, and might be made an excellent harbour. There is no place between Otarunai and Hakodadi which can be used as an anchorage, except Sutsini and Rogers Island, and there only under favourable circumstances. Considering Otarunai as a harbour, there are then four along the 1000 miles of coast line, namely, Hakodadi, Enderino, Akishi, and Otarunai; and three anchorages possessing good shelter—these are Hamanaka, Nemoro, and Sutsini.

None of the places I visited in the East had ever seen European vessels even pass the coast, except some years ago, when a vessel went once or twice to Nisibets, and a steamer passed into the Straits of Yezo, and proceeded to Nemoro; the *Sylvia* is the first man-of-war, and almost the first ship, that has been round Yezo.

South-East Coast of Yezo.

On May 5th, 1871, H.M.S. *Sylvia* left Hakodadi for the eastward. Cape Yerimo was passed at midnight. It is probably as much as 15 miles out of position, as laid down on our chart (Kuril Islands, 2405), but is correctly shown on the Japanese chart of this island.

Akishi, or Cape of Good Hope Bay, was reached in the afternoon of the following day. This bay is 18 miles to the east of

its position as shown on our chart, and about 2 miles south in latitude; but is correct, according to the Japanese chart, not only in position, but in delineation. A meridian distance was taken here.

The Japanese have a settlement at this place, consisting, according to the statement of the head official, of 40 Japanese and 160 Ainos. Fish of numerous kinds—salmon, herring, flat fish, and a very white silvery fresh-water fish, about 10 inches long—abound. The salmon do not come into season until August and September.

Some of the fish are dried, but the greater portion are boiled down for manure, which is sent south. Seaweed cutting and drying commences in July, lasting three months, during which time fishing is almost suspended. Junks bring provisions during the summer; overland there is a path to Hukodadi, which place can be reached in about 17 to 20 days.

The cultivation of rice was commenced, but entirely failed; nothing else has been attempted until this year, when about a quarter of an acre has been planted with common potatoes; they were not put in the ground until the end of May. Notwithstanding the inducements of a house, money, and free living being held out by the Japanese Government, these people cannot be got to migrate so far north, dreading the cold season. I am given to understand many die from cold during the severe and lengthened winter.

The Japanese, contrary to their usual custom, live a great deal on animal food, not only here but at the other places we visited; deer abound during the winter months. The Ainos appear to be in abject slavery to the Japanese. Money is seldom used, wages being paid in kind. The head man informs me the expenditure on the part of the Government last year amounted to 11,000 dollars, against which exports (fish and seaweed) brought in 15,000 dollars. I very much doubt this statement; probably, like most Japanese accounts, it is according to what suits the individual, without the slightest regard or idea of truth.

The country, from a little to the westward of Akishi, suddenly becomes perfectly flat in appearance, as if the higher ground had been sliced off, so very even and level does it look. It is in reality nothing but a repetition of small hills and valleys, with streams and rivers running in every direction. In height it is 250 feet, gradually lowering eastward. The whole country is covered with wood, mostly deciduous trees, mixed with spruce, fir, and yew. Of the deciduous kinds I collected fourteen or fifteen—oak, birch, walnut, and hazel are the most numerous. Hardly any of these trees grow large

enough to make timber, except the spruce pine. This is, however, owing to the tangled mass the woods are in. Trees of all ages lie strewed over the ground, heaped one across the other, covered with moss and lichen of long and wild growth; wild currants, raspberries, and creepers are the principal undergrowth, with again underneath this a rank, coarse, bamboo grass. The country is at present in its wildest, most tangled, and impenetrable state. In places there are immense lagoons and swamps, the swamps overgrown with rank strong reeds and hazel shrubs. The soil is made up of decayed wood and leaf-mould, and is very rich. The rock is universally conglomerate.

At the head of the bay is a large lagoon, with a good-sized river running into it; the lagoon is very shallow, almost dry at low water. The river is pretty rapid, and comes from the north-west. Oysters abound in the lagoon, also other shell-fish; and numerous species of water-birds, waders, and divers, congregate in great numbers over this well-adapted locality for them.

The climate of Akishi is far more moderate than after rounding the east cape. In the middle of May snow lies in great heaps, hard and thick, but principally where it has been drifted into deeper dips and sheltered nooks; still the whole country was very humid from the melting snow, small streams running in places where otherwise it would be quite dry. Here frost sets in hard in September, and snow falls soon afterwards, which shortens the summer considerably.

The Japanese here, certainly in appearance, look the picture of health, and very much as if the rigorous climate agreed with them.

The coast between Cape Yerimo and Akishi, a distance of nearly 90 miles, stretches about north-east from the cape, slightly curving back, then trending more to the eastward; there is not even an indentation along here. Junks do anchor during a westerly wind a little to the north of Yerimo.

Kusuri, a Japanese settlement 20 miles west of Akishi, is situated at the mouth of a river. There are about 500 Japanese and rather more Ainos here: the usual thing, fish and seaweed, being the produce of the place. A vessel can anchor off the settlement if the wind is off shore, or between north-west and north-east, but not otherwise. Considering this bay a good anchorage, and believing it to be the only place towards the east end of Yezo which could be termed such, I decided to make a plan of it. Leaving officers and men to do so, I left on the 12th of May, when the weather appeared to have settled, and reached Hamanaka the same day.

Humanaka.—This is the next settlement, 13 miles east of Akishi. It is a large open bay, except for an island running across the southern part, and which forms the anchorage inside it. There are more Ainos and Japanese here than at Akishi; the same produce, fish and seaweed, and no cultivation. Snow lay in greater quantities than at Akishi. It blew hard for two days, so much so, that I was unable to land except on the evening of the 13th.

Cape Noyshap.—On the 14th, Sunday, being fine, the *Sylvia* left, and at noon was abreast Cape Noyshap, the east cape of Yezo (Nossyam or Broughton), which is 17 miles south-west of its position on the chart. It is a rocky, rugged-looking point, nearly 40 feet in height. From Akishi here the land is a most gradual slope, and of exactly the same aspect, except that there are larger patches of the country with only the rank bamboo grass growing on it. The trees are more stunted, and very much twisted and weather-beaten, appearing as if swept out of the perpendicular by the strong westerly winds. The islands to the eastward of the cape are similar in appearance to the mainland, and look very much as if in former ages they were part of the island of Yezo. For a distance of 3 miles due south of the cape, and along the land for several miles west of it, are reefs and rocks in every direction.

Yezo Strait.—There is a clear pass, of about 1½ mile in width, between Cape Noyshap and the nearest reefs off it. But from here (these reefs) stretching east and towards the islands, appearing connected with the islands, and, in fact in every direction, are reefs and rocks, both under and above water. The islands being so low and flat, are seen at no great distance. The nearest island to the cape, the most northern one, is 5 miles off, the southern 7 miles. A more ugly or dangerous pass and locality could scarcely be found, being, as it is, open to the Pacific, and constantly enveloped in dense fog. And the currents, both strong, and unknown for certainty as to direction, add to this rugged cape dangers which had better be shunned by proceeding further east, and passing between the large and high island Skotan, and the most easterly of this low flat group.

There are ten islands in this group, Skotan making the eleventh. The easternmost one from the cape is 20 miles distant. Skotan is 20 from this one, leaving a good passage between of 20 miles in width. Skotan (Chicotan on sheet 2405) has a few Japanese settled on it. Also Sibuts, the north-western one of the group, has a few settlers. Fish and seaweed are the only two exports in Yezo. These islands abound with seagulls, albatross, and other birds.

As soon as the cape is passed, the strait of Yezo is entered.

The *Sylvia* reached Nemoro about 3 P.M.; it is nearly 15 miles almost due west of the cape. Its position (on sheet 2405) is more than 22 miles to the north-east of its real locality. A meridian distance was taken to this place.

The anchorage at this settlement is capable of giving fair shelter for one vessel of small size, besides some junks, which make fast to the rocks on the island, that running across the bay, forms the anchorage inside it. As this is the only place in the east extreme of Yezo with any pretensions whatever to an anchorage, and being a Japanese settlement, I made a plan of it.

On the 24th of May I took a line of soundings across the straits, taking the course from the Japanese chart, which includes Kunasiri Island. Immense masses of floating ice blocked up the northern entrance of the straits. The north-east cape of Yezo was almost entirely covered with snow, and on Kunasiri Island quantities still lay in detached heaps.

Tomare or Kunasiri Island is similar to Yezo, producing wood, principally oak and birch, but, except in places where there happens to be shelter, the trees reach scarcely 20 feet in height, and appear then to be twisted to all kinds of shapes; the tops blown off. Spruce pine is of some size in the valleys. The same coarse bamboo grass flourishes as well as it does in Yezo.

Itmen Bay is open to the south and south-west; it is very shallow, but regular in depth. There are about 150 Japanese and Ainos in the settlement. Seals and ducks are very plentiful along the shores of the low spit forming the eastern side of the bay. The south-west point of Kunasiri Island was fixed astronomically.

Notski.—27th May. To-day, being fine, I took a line of soundings across to Notski, a curious nook-like, sandy spit running out from the Yezo shore on the western side of the strait, and from here to Nemoro. The soundings give a very irregular bottom.

Between Nemoro and the north-east cape, Sirotoko, there are three settlements, all under the Governor of Nemoro. The Japanese surveying officers have been employed surveying this part.

On the 2nd of June the *Sylvia* left, anchoring that evening at Hamanaka, and returning to Akishi the next day; sights were obtained on the 1st. I went to Hamanaka to fix it astronomically, bringing a line of soundings from Nemoro to Akishi. Considering the weather experienced, the survey of the last-mentioned bay had got on very well; but every available hour

had to be taken advantage of, both previous to my return and after, the fogs becoming more frequent and of longer duration.

The Governor of Nemoro is a man of consequence, and, unlike Japanese generally, is energetic and clever. He has made sketches and even plans of the whole of his jurisdiction, and for three years noted regularly the climate, change of seasons, duration of ditto, winds, &c. I have more confidence in this man than in any Japanese I have yet met.

From my own observations, the current flows through the north-east straits, between Yezo and Kumasiri, always running to the southward. The temperature of the water was 37° , average in May, both at surface and bottom. From Cape Noyshap to Yerino it flows west along the coast. Temperature 36° to 37° , both at surface and bottom. The colour of the water is uniformly of a brownish tint. It was generally 40° when soundings were taken. This cold current, constantly flowing up against the coasts of this island, causes, even in latitude 42° to 45° , the climate to be rigorous and the summer short. The sun having great power during June, July, and August, soon heats the land, consequently an easterly wind, which is cold, coming off the Arctic waters, with a temperature of 37° , invariably brings a fog. Whenever we have had the wind from the south-west to north-east it has, almost without exception, brought fog. West to north-east winds, or off the land, clear the fog off in a very short time.

Temperature of the atmosphere during May varied from 70° to 30° . In this month we had most severe weather, both at this place and Nemoro. 22nd and 23rd, a strong westerly gale, veering round to north-east, and bringing snow, the entire country being covered to a depth of 8 inches. Fierce and sudden winds lasting for half a day, then shifting and dying away, or springing up from another quarter, were frequent; the thermometer on many occasions below freezing-point. The winds were very cutting, and rain fell to a very considerable amount, with the wind from any quarter. Great quantities of floating ice drifted through Yezo strait, brought down, probably from the coasts of Sagalien, with the current.

Snow fell on four days at least; rain on twelve; and twelve days were foggy; south-west was the prevailing wind. The Governor at Nemoro states, that, during June, July, and August, frequently for three weeks at a time, he has never seen the sun, so constant are the fogs. At this place and Kusuri the head men agree in stating, until the frost comes in September, they usually have about three fine days a month, without fog, during the entire summer months.

On the 2nd of June snow still lay on the ground at Nemoro, and the north-east cape, Sirotoke, which is high land, retained great quantities for a considerable way inland. The summer is now commencing, 13th June, and by all accounts is over about the first week in September. The sun during the summer being usually obscured by fog, is a very great drawback to any agriculture. Grain, rice, beans, and a few other seeds have been tried by the Japanese. Mustard appears to be the only one, however, that came to anything. This was at Kusuri.

At Nemoro hard frost sets in in September, and snow falls in October. The strait is frozen over in great patches by December. There appears to be no spring. The snow disappears by the end of May, and by the first week in June summer may be said to have arrived. The buds burst immediately, the first flowers show out; good and rich grass springs up (while you look at it); the early trees are green in a few days; and so sudden is the transition that it appears almost incredible.

There are no mines or minerals known to exist, except at Sykubets, a little west of Kusuri, where coal is procurable from the surface.

Birds and animals appear to pay little regard to the seasons, reproducing their species early in May; the former sitting on their eggs surrounded by snow. The principal fish found in the eastern parts of Yezo are herrings, which are in incredible numbers. The temperature of the sea being below 40° , which does not agree with the temperature the same fish are found, on our own coasts, in 54° to 58° . Salmon are not so plentiful as on the west coast; these fish are not in season until the end of August; flat fish are not sought, but are common. The mode adopted for procuring herrings is simple enough: a long straight net is run out from the beach, where the water is shallow, at about 300 yards distance is a large square bag, similarly set, and arranged as the *stake* net for salmon in Scotland. This fish is both larger and coarser than that found in our own waters, and tasteless in comparison. The Japanese do not understand salting herrings, boiling them down for manure being the chief way of gain.

Both government and private firms have fishing companies sent to all these settlements, and, as far as the quantity of fish goes, there is ample field for very many more than at present are engaged in it.

SUMMARY OF WHAT HAS BEEN DONE SINCE THE *Sylvia's* LEAVING HAKODADI, INFORMATION GAINED REGARDING CLIMATE, SEASONS, &c., AND SUGGESTIONS RELATING TO THE SURVEY OF THE COASTS, BESIDES OTHER PARTICULARS.

A meridian distance was taken to this place, Akishi Bay, and a complete survey of the port made. It is, without exception, the only place or locality which is a port, and to which a vessel can make in stress of weather, if blown to the eastward when proceeding to Hakodadi, and which is not unlikely to happen during the winter months; also if proceeding to the eastward round Yezo, it is an excellent place to have on your lee if caught in a south-east gale, or to wait during fogs, previous to starting east, and if the coast of Yezo is to be surveyed. It is now a starting-place, and a rendezvous for coal, &c. From here the *Sylvia* proceeded, as close to the coast as possible, to the next settlement, where there is an anchorage, a distance of 13 miles.

From here to the next cape, east 15 miles, as close to the coast as prudent, and on to the east cape of Yezo, Noyshap, 20 miles further, rounding this dangerous cape, passing between the reefs, visible above water, and proceeded to Nemoro, considering it as the principal Japanese settlement, and only place that can be called an anchorage, anywhere in the east extreme. I fixed it and surveyed the bay. From here, took a line of soundings across to Kunasiri anchorage, and fixed south-west point astronomically, back to Notski or Yezo, and from Notski to Nemoro. These soundings, being to and from the south-east and south-west extremes of Kunasiri Island, and across the strait at different parts, proved at any rate that no regular shoal extended off the southern end of Kunasiri, and also that there is a passage or channel through this strait; this, however, will be shown and remarked on sheet now in construction, and remarks for directions, returning from Nemoro here, with sights and soundings the entire distance. From here I take sights back to Hakodadi.

Nemoro, as well as this place, being now properly fixed and surveyed, is another place as a starting-point for detailed work, and a rendezvous for coal in bad weather, &c.

On the 14th June, having fortunately got sights the previous day, the *Sylvia* started, and reached Cape Yerinio the following day. The fog clearing most opportunely, I remained here, fixing the cape astronomically, and examining the cape and reef off ditto. A line of soundings, and constant current observations, were brought from Akishi here (Hakodadi) previous to

starting west. I intend proceeding to Endermo Harbour, which has been surveyed but not fixed.

Climate.—May was a cold, raw, and boisterous month; frost and snow were frequently experienced. To this time in June it has been very much finer, but foggy as much more frequently, lasting five days at a time. In the beginning of the month, herbage was as far forward as it is in England about the first week in April; but, as previously stated, when once commenced it rapidly progresses.

The shortness of the summer, and the cold winds which prevail during the few months constituting that season, besides the almost perpetual fogs, would render any attempts at cultivation, if not impossible, at least very unprofitable; what has been tried has failed. Roots would probably answer better than grain. The soil is good, but damp. Salting fish might be enlarged upon to any extent, and would prove most lucrative.

The increase of population at these settlements appears to be brought about but very slowly and tardily, the Japanese disliking the hard winter, and cold fogs of summer. In winter they do nothing; sleep like their neighbours the bears, which animal is common. All the Japanese I have conversed with wish to return south.

The Japanese chart is, comparing it with proper observations and fixed positions, very correct as far as the coast line goes, and islands lying off it. What they do not appear to lay down on their charts, or maps more properly speaking, are reefs or dangers not seen. Soundings and plans of good anchorages are required; but for all purposes at present, and likely to be so for many years to come, a detailed survey of the coast would be a great waste of time and labour. The Japanese chart is quite sufficient for all present purposes. European vessels (having no business to call them this way) never proceed east, or visit any of these small and insignificant settlements; a few junks during the summer carry off all that can be got together of dried fish and seaweed. A sheet of the east cape, which would necessarily include the islands and reefs off it and them, would take probably two entire seasons to complete, through months being wasted by fogs and bad weather.

Unless this part of the world took an entire revulsion, and changed from a rigorous to a moderate climate, and mines were opened, and ports formed or turned up where there are none now, it would be useless, as well as a waste of time, money, and labour, to commence any detailed work. Russian men-of-war occasionally pass east of Yezo, but always take the passage between Kunasiri and Iturup, or Staten Island; and doubtless this is the wisest and best course. The dangers off Cape Noyshap,

and the group of islands mixed up with reefs, rocks as they are, besides those extending some miles off the cape itself, particularly to the southward, cause this narrow pass round the cape to be most dangerous, and fogs coming on suddenly add much to these dangers. If a vessel once gets within them in making for the pass, and becomes entangled in fog and bad weather, she is placed at once in imminent danger. The currents also are strong, and whirl round this cape and among the reefs.

The governor at Nemoro promised most faithfully to erect a beacon 20 feet high on the cape, which will enable a vessel to pick it out with certainty, which at present is very difficult, even with a complete sheet of the strait, cape, reefs, &c. This will never be a pleasant place to make, in a vessel; but if any detailed work is to be done of the eastern part of Yezo, this I should first recommend. The other coasts are regular and even, with deep water off them, and are well delineated on the Japanese maps.

TRANSLATION OF THE GOVERNOR OF NEMORO'S NOTES ON
WEATHER, &C., DURING THREE YEARS' RESIDENCE THERE.

"It begins to snow, end of October.

"The snow disappears by May; it is 2 feet deep all over the ground during the winter.

"The sea freezes a long way out.

"The ground is frozen hard to a depth of 2 feet, and remains so up to June.

"The Japanese never can wear summer clothes.

"Fog is constant all the summer.

"Radishes, turnips, and potatoes will grow.

"The current is always running through the strait, coming from the north-east, and it never runs the opposite way."

I think these few remarks can be depended on. This man is both energetic and clever, and has made Nemoro what it really is, a small but flourishing settlement, although at present composed of only a few huts and houses.

XI.—On the "*Ruined Cities*" of Central America. By Captain
LINDSAY BRINE, R.N., F.R.G.S.

AT the time of the Spanish Conquest the Indian races of Central America appear to have attained to a very singular and remarkable form of civilisation. The cities that now lie hidden in jungle and forest were then densely populated. A powerful

priesthood occupied the numerous temples and monastic buildings that are found all over Yucatan, Guatemala, Chiapas, and Mexico; a fixed and mild form of government was established; the people were employed in agricultural or State labour; methods of symbolic language were in course of construction and improvement, and hieroglyphies were in use to express astronomical data and the principal meteorological and political events. It is much to be regretted that the discovery of the American continent occurred before the aboriginal inhabitants had sufficient time to develop their growing civilisation. The Tottecán and cognate races that then occupied Southern Mexico and the Central provinces do not appear to have been long settled there when the Spanish conquerors overran the country, and destroyed for ever any hope of the Indian race ever becoming one of the influential and civilised races of the world. In the United States and in Canada the destruction of the Indian tribes has not had the same political consequence, for these would have been now, what they were in the sixteenth century, with all the vices and virtues of their unsettled and savage natures. What races preceding these were the mound-builders of the Mississippi and Ohio valleys cannot with certainty be known, although it is probable that they were branches of the race that raised the mounds in Guatemala. The ruined cities of Central America undoubtedly represent the highest condition of civilisation to be found in the northern continent, and therefore it is of the utmost importance that these evidences of architectural and scientific knowledge should be thoroughly investigated. From time to time accounts of some of these ruins have reached Europe, but usually in the vague form consequent upon the exaggerations of the Spanish historians, and it was not till the last century that any trustworthy reports were made upon them. Palenque was then officially surveyed by Captain del Río, under the directions of the Spanish Government. Since then other partial discoveries have been made, especially by De Waldeck, but for a complete and exhaustive report upon all the ruined cities known to exist in Central America and Yucatan, we are indebted to that most accurate traveller, Mr. John L. Stephens, an American, who, more than thirty years ago, carefully investigated the subject; and I may here state that, having myself visited many of the cities he describes, I can testify to the perfect fidelity of his report, and the accuracy of the drawings made by the artist who accompanied him, Mr. Catherwood. It is very remarkable that all these ruins, evidently the work of one particular and exceptionally civilised race of Indians, should only be found in a very limited area. None exist in South America, and none in that part of the continent

commonly distinguished as North America. They all lie within the tropics, between the 12th and 22nd parallels of north latitude, and are chiefly adjacent to the Mexican and Honduras gulfs, or in the plains on the east of the Cordilleras of Central America. On the western or Pacific slopes and plateaus, within the same parallels, are also remains of ancient fortifications and sacrificial altars, but these are of a less elaborate type, and are allied to the Aztec structures of Mexico. All this section of America is so interesting and so little known that, in the spring of 1870, after quitting the Mexican ports on the Pacific, I decided to endeavour to cross the continent in a line from west to east (from the Pacific through Guatemala to the Atlantic), in such a manner as would enable me to examine in detail the mixed populations and conditions of the lands between the Cordilleras and the Pacific—the central plateaus, with their aboriginal Indian races and ruins; the region almost entirely unknown, inhabited by those unbaptized Indians called the Candonés, near which lie the ruins of Ocosingo and Palenque; and, finally, to conclude the journey by traversing Yucatan, visiting the strange ruins with which that country abounds, and emerging on the northern coast of the peninsula at Sisal, where I hoped to find a vessel to convey me to Cuba or New Orleans. Such was the outline of the journey I proposed to attempt, and which, after much difficulty and fatigue, and some slight danger, I was able to complete. In this paper, which is necessarily very brief, and cannot, therefore, embrace any of the daily incidents of my travel, I shall confine myself to the notice of certain principal subjects—the chief problems which the races and ruins of Central America present for solution.

The great physical features in Central America are the ranges of the Cordilleras, which stretch, without a break, northwards through Mexico into the United States and British Columbia, where they are known as the Rocky Mountains. To the south they dip to a low level at the Isthmus of Panama, and then rise again into the Andes of South America. The high range immediately adjacent to the Pacific is known in Guatemala and Southern Mexico under the name of the Sierra Madre, and this consists of a most remarkable chain of volcanoes, which rise sharply in continuous succession to heights of from 9000 to 16,000 feet. Behind this volcanic range are the great, elevated table-lands or plateaus, placed at an average level of 4000 to 5000 feet above the sea, and these, again, are crossed in all directions by high ranges or spurs belonging to the central ridge. These difficulties of communication are further increased by the volcanic nature of their formation. It is evident that the whole of this portion of the continent has been subject to most tremendous

earthquakes. Long, deep, perpendicular rents occur at frequent intervals, traversing the plains for several miles in length, and often exceeding fifteen hundred feet in depth. Then there are met with occasionally large, deep, natural pits, evidently formed by some subsidence beneath. These are not unanalogous to a class of geological phenomena known in the United States under the name of sinks, and which made their appearance in the State of Missouri, and particularly in the neighbourhood of Saint Louis after the earthquake at New Madrid in 1812. There are also several lakes, yet unfathomed, which deepen abruptly from their shores. Earthquakes are becoming less frequent, and no serious shock has been known since the final destruction of the ancient city of Guatemala in 1773. There is a singular circumstance connected with an earlier destruction of this city which deserves notice. The ancient capital was situated between two large volcanoes; one known as the Volcan de Agua, and the other as the Volcan de Fuego. The former, which is about 14,000 feet high, was supposed to be extinct; the latter, which is above 15,000 feet high, was occasionally active. In 1541, in September, the Volcan de Fuego showed signs of activity, and then began a series of subterranean shocks which alarmed the inhabitants for the safety of their houses; but still nothing unusual was expected, and there was no apprehension of loss of life. But, in the middle of the night of the 11th, the extinct volcano of the Agua gave indications of some terrible subterranean movement, and suddenly there poured down from the summit or upper slopes of the mountain a vast torrent of water, which, sweeping down with irresistible velocity, swept the greater part of the city into utter ruin, and drowned thousands of the inhabitants. There have been many theories started and abandoned which have endeavoured to explain this extraordinary event. Perhaps the probability is that a small lake, or a considerable volume of water, had been lying dormant in the crater, and that this became suddenly thrown out by some subterranean action of upheaval.

The present Pacific seaport of Guatemala is San José, a completely exposed roadstead that has been lately preferred to that at Istapa, a few miles further down the coast. For 30 miles after quitting the coast the road pierces the tropical vegetation and dense forest-growth of the "*Tierras Calientes*," or Hot Lands, the name given to the low country lying between the Cordilleras and the sea. On emerging from this the road ascends to the plateaus of the interior, before which the huge volcanoes of Fire and Water stand like a gateway, and finally enters the city of Guatemala, on a broad table-land 4000 feet above the sea, and 70 miles from the coast. In passing over

this distance, the vegetation of the country presents great changes. In the low coast lands the vegetation is altogether profuse and tropical, while on the plateaus it becomes scanty. It is instructive to notice which are the tribes or races that love the tropical climate of the coast, and which are those that prefer the high lands of the interior. On the low lands the inhabitants are chiefly of the mixed race, known under the name of *Zambos*; that is, a cross between the Indian and the African negro. It will be remembered that, for many years after the Conquest, the Spaniards introduced great numbers of negroes into their Central American colonies, and these remained and thrived, and eventually intermarried with the native Indians. These *Zambos* have produced a numerous and physically strong race, but the original negro blood in their veins impels them to shrink from labour and cold, and thus their huts are found chiefly among the palms and plantains, and tropical vegetation of the *Tierras Calientes*. It is, however, a singular fact, that the two most remarkable men that Central America has produced since the revolution have been Indians with negro blood in their veins. The President Carrera was one, and Serapio Cruz, the leader of the last Indian revolt, was the other. Juarez, once Judge of the Supreme Court, and ultimately President of Mexico, was a pure Indian. On the eastern slopes of the Cordilleras the natives are usually pure Indians, but yet not absolutely of the aboriginal stock of the country. In the various invasions made by the Spanish generals, they brought with them as allies large numbers of Mexican Indians of the Aztec and Tlaxcalan tribes, and these have introduced many customs and superstitions which rightly belong to Mexico. It is only in the interior, and in the secluded valleys among the mountains, and in the districts adjacent to the ancient ruined cities, that the descendants of the aboriginal Toltecian race are to be found; and these can be traced partly by language, partly from a peculiar type of feature, but chiefly by the wonderful persistency with which they retain certain ancient superstitions and certain household usages. This is a subject beyond the limits of this paper, and it is only necessary to remark here that there is quite sufficient evidence to enable it to be clearly assumed that the descendants of those advanced races which raised the temples of Palenque and Uxmal, and which built the fortresses and mounds of the interior, are still existing in their neighbourhood.

The modern city of Guatemala is situated in the centre of a great plain, which happens to abound with earth-works and tumuli of ancient Indian construction, similar in character to those of the valley of the Mississippi. Nothing can exceed the

beauty and convenience of the situation, and the Spaniards have taken care to reduce the danger from earthquakes by placing it more than 30 miles from the volcanoes. The early capital, known under the name of the "*Antigua Guatemala*," still remains, but its cathedral and houses are rent by earthquake. The coffee-plantations are numerous and highly productive, and there are everywhere evidences of considerable prosperity. There is a small European population, formed partly from the diplomatic corps, and partly from the coffee planters and their agents. There are also some descendants from old Spanish families, but the majority of the householders are of mixed descent. All the great labour is performed by Indians, who are seen thronging the roads at sunrise, carrying, by means of bands or straps passed round their foreheads, heavy cargoes of vegetables, fodder, corn, fruit, and coffee. Before the Spanish conquest there were no horses in America, nor any beasts of burden, and there can be no doubt but that all the work of portage was performed by men as it is now; and it is a great proof of the way in which habit predominates, that on no part of the continent has that ancient system changed. Central America now abounds with mules, the animals above all others most fitted for portage; and yet the native Indians never use them for that purpose. The whites use them largely, but the Indians conserve their old ways, and their children are trained from the earliest youth to bear great weights. In the United States and Canada it is observable that their Indians give all the labour of portage to the women of the tribe; the men never carry any burden. It is the reverse with the Indians of Guatemala; with these the carrying of weights, and all labour of that nature, is entirely performed by men, and the women only perform the duty which strictly belongs to their household work—the carrying of water and the grinding of corn. This unvarying distinction in the habits of the northern and central races is very remarkable. The city of Guatemala contains a large cathedral and numerous churches, which, on saints' days, are thronged by Indians from the surrounding country. Here, as in other parts of Central America, religion forms the chief, and indeed only, bond of sympathy between the whites, the half-breeds, and the Indians. In all other respects the Indians are as opposed as they were on the first arrival of the Spaniards, and still retain a deeply-rooted aversion to them. Throughout my journey I found the Indians in revolution—in Guatemala, in Mexico, and in Yucatan. They still fight bravely, but with the same want of discipline and combination as in the sixteenth century. I have already observed that in the same plateau with the modern city are to be found evidences of ancient earth-

works. These are but slightly known, and have never, I believe, been properly examined. As I had but lately concluded an examination of the great mounds and fortified positions in the Ohio and Mississippi valleys, it was of the greatest interest to find that I was in the midst of an absolutely similar class of constructions; these being equally imposing, equally open to conjecture and theory, more numerous, and, I think, rather more ancient. The only attempt that has been made to examine the mounds scientifically was under the directions of Carrera. One of these, which was nearly equal in height and magnitude to that known as the Grave Creek Mound in Virginia, was cut through from the top to the bottom; and a singular discovery was made. A large granite grinding-mortar was found at the base. This was highly sculptured and ornamented, but, in other respects, it was absolutely identical with those now used by the Indian women for grinding their maize or corn; and, what is still more worthy of note, it is also precisely similar to a mortar I found in an ancient Indian shell-mound in Upper California. The earth-works and sacrificial altars connected with these mounds show a similarity of plan with the stone structures of Palenque, but they are much destroyed, and are difficult to trace accurately. So little, however, have these works been changed in modern times, that I found them still strewn with fragments of obsidian arrow-heads and lances, such as were used during the early wars between the Indian tribes before the introduction of iron.

Four great highways converge at Guatemala city; one leads to Mexico, another to the Republics of San Salvador and Costa Rica; a third goes direct to the Pacific coast; and the fourth traverses the Northern Cordilleras, and terminates at the Lake of Peten. From this lake an Indian track runs through an almost unknown region into Yucatan. In order to visit the ruins of Palenque and Ocosingo which lie far away from any of these main roads, I found that it would be most convenient first to reach the frontiers of Mexico, and from these strike north by the Indian trail over the Cordilleras and through the forests of Tabasco. This route, although dangerous and difficult, gave the advantage, by making occasional *detours*, of visiting various Indian ruins in the interior, and enabled me to trace by degrees the affinities of language and customs of the people; and also to trace the connection between the ancient forts and religious earth-works of the interior, and the stone cities near the Atlantic coast. On the 30th January, 1870, after having overcome the difficulties of obtaining good mules, trustworthy guides, and useful provisions, for which I cannot sufficiently thank our English *Chargé d'affaires* and the kind-hearted European com-

munity. I left Guatemala, and on the 8th of April I reached Sisal on the northern coast of Yucatan, having in the interval crossed the continent in the direction of the track traced on the map. After visiting the Antigua Guatemala and the adjacent volcanoes, I turned northward to visit the ancient residence of the Kachiguel Kings at Patinamit, now called Tecpan Guatemala. At Patinamit, as at other Indian fortresses, the Indians chose situations of great natural strength. The great volcanic chasms, which occur so frequently all over the country, offer most excellent defensive positions. Patinamit is a portion of the surrounding table-land, but is completely isolated from it by a deep chasm or Barranca, which surrounds it; this chasm is about 700 feet deep, 300 yards wide, and has perpendicular sides. In fact, it answers the purpose of an enormous ditch surrounding a fortress. The approach is made by a zigzag path, cut down on one side and up on the other.

St. Cruz Quiché, the fortress of the Quiché Indians, is similarly isolated. On the fortified plateau of Patinamit there yet remain evidences of walls and earth-works, together with several burial or sacrificial mounds; the Indians of the adjoining village hold an annual festival there, but, strange to say, they have not the slightest traditions, and are entirely ignorant of the origin or usages of their predecessors. On leaving Patinamit I diverged across the Sierra to visit the Lake Atitlan, and on reaching the edge of the western slopes witnessed what is probably the most magnificent view on the continent. The lake itself is a large body of water lying quietly in the heart of a wild mass of volcanic mountains. Two enormous volcanoes, fully 10,000 feet high, rise up on one shore, and the range of the Sierra Madre rises abruptly on the other; while all the country around is covered with active and extinct craters. This region of Guatemala has never been scientifically surveyed. After visiting the shores of the lake, I proceeded northward to St. Cruz de Quiché. In crossing these high lands it is observable that the Indians dwelling among the mountains are much darker than those on the plains, and, indeed, it may be laid down as a general law, that throughout Central America, the colour of the natives varies according to the height above the sea, and in a manner entirely opposed to what would naturally be expected. The skin of those who dwell in the highest and coldest regions is almost black, while below in the warm valleys, and near the coast it is of a pale copper colour. The mountaineers are also much more superstitious, and still worship their ancient idols.

The ruins on the plateau of St. Cruz de Quiché are numerous and well preserved. The plan of the structures and altars, and

their relation to the cardinal points is the same as at Guatemala, and the same as certain portions of Palenque. It is quite evident that they were entirely for religious purposes, and consist of enclosed courts and pyramidal altars. The walls and buildings of the enclosures are destroyed, and only their traces are left, but the altars remain. These are of the usual form, and are composed of stone and rubble, and cased with slabs of pumice-stone. They vary from 30 to 50 feet in height, and are ascended by broad steps. Idols of stone and terra-cotta are found among the ruins, similar to those still worshipped by the Indians in the adjacent mountains.

The dialect of the Quichés differs in several important points from that commonly spoken in their neighbourhood. But the fact is, that, with all Indian tribes, the absence of written language brings to pass in time great differences in the usual conversational language, so that it frequently happens that within a comparatively limited area, tribes whose languages are clearly traceable to a common, and not very remote, origin, are yet unable to converse with each other.

After leaving St. Cruz Quiché I left the main road, and followed an Indian trail or bridle-path, in order to enable me to pass through remote villages, lying apart from the usual lines of travel; and it was interesting to observe how unchanged the natives were in every respect, and how accurately the statements of the early Spanish historians represent the truth. Now, as then, they have no cattle, and live simply upon Indian corn, black-beans, and cocoa. The women are naked to the waist, and the men rarely wear more than a cloth round the loins. The same system of village caciques remains in force, and the same customs regarding tenure of property. In one respect only have their customs changed: before the conquest the Indians were polygamists, and usually had from four to twelve wives, according to their wealth and position. The Spanish Government have rigidly put down this system, and enforce with great watchfulness the law of monogamy.

In the region through which I was travelling, so rarely is a white man seen, that on approaching the villages, men, women, and children, would come out and crowd around my mule and implore a blessing, and lift up their heads that I might touch their foreheads, and in the evening, when the mules were unpacked, and we were quartered for the night, the sick were brought to be cured.

After crossing the frontier, and entering Mexico I proceeded northwards to Ocosingo, near which exist the remains of an ancient stone city. The track skirted the mountains within whose recesses dwell that mysterious and unknown race called

the Candones, or Unbaptized Indians. Rumours have reached the frontiers from time to time of strange sacrificial rites—of extensive stone cities—of great opulence in gold and silver—and of a tall white-robed people of superior appearance and intelligence.

Various individual attempts have been made to enter this forbidden country, but without success; and men have returned with fabulous accounts, magnifying the unknown into the magnificent. I had occasion subsequently to know something of these Candones, and I believe them to be simply the descendants of refugees from Yucatan, who fled to these inhospitable mountains when their houses were burnt, and their altars were destroyed by the Spanish invaders. They are, in fact, a simple agricultural race, who, in their mountains follow the rites and usages of their ancestors, and who have cut themselves off from communication with the outer world, to avoid contact with the hated white race.

To what extent they perpetuate the custom of raising stone palaces and altars, or continue the old system of human sacrifice is of course utterly unknown, as no stranger has ever penetrated beyond their frontier.

At Palenque groups of wild-looking and shy men of this long-haired, white-robed people came occasionally from their homes to sell cocoa, beans, and cotton, in exchange for certain European products, which find their way inland from the Mexican Gulf port of Tabasco.

At Ocosingo, a Mexican town which lies at the foot of the Lacandon Mountains, I was strongly urged to help in organizing an expedition to penetrate this unknown country. Thirty volunteers enrolled themselves, and others promised to join from some adjoining villages; but the permission of the Mexican Government had to be obtained, together with a contingent of regular troops, and the time at my disposal was too limited to allow me to wait for all these arrangements.

However, I am strongly of opinion that a survey should be made of all this unexplored country; but I doubt of its success, unless thoroughly organized by the Mexican and Guatemaltecan Governments. Such an expedition would be most interesting and valuable, and no better field for energy and novelty exists. It ought to tempt the faculties of all enterprising Englishmen.

The ruins of Ocosingo are of the same date and character as those at Palenque, but are much inferior in extent and magnitude. Leaning against the ruined walls of the convent at Ocosingo is a very perfect specimen of an early Indian stone idol, whose back is covered with deeply-cut and well-preserved hieroglyphics. These I carefully copied, in order

to compare them with those I expected to find at Palenque or Uximal. It has always been a hope among philologists, that some day the mystery of the Mexican and Palenquian characters will be cleared away, and that a clue will be discovered to their meaning. Unfortunately, it is quite impossible that any bilingual tablet can exist such as that found at Rosetta which gave the key to the Egyptian hieroglyphics, and therefore it only remains to ascertain whether there is any frequent recurrence of similar signs sufficient to form a base for theoretical assumptions. My own slight investigations are not hopeful, for I think the hieroglyphics are too scarce for any useful generalization. Still, on many of the altar slabs, and on several idols, there are inscriptions in which similar characters are to be found; and perhaps it is possible that a careful examination of all ruins, and good photographs of their hieroglyphics, might furnish useful data for comparison. With respect to the affinities between the Palenquian and Mexican hieroglyphics which have been so much denied, it seems to me impossible for an impartial investigator not to admit that great similarities do exist. In fact, there can be no doubt but that the builders of the ruined cities of Central America and the builders of the great altars and Teo-calli of Mexico were originally of cognate races under slightly different conditions of civilisation. Their religious ceremonies and sacrifices were of the same nature, and their astronomical knowledge was based upon similar calculations. That their spoken languages were different presents no difficulty to those acquainted with American Indians of allied stocks, with whom a few hundred years of time and one hundred miles of distance, suffice not only to completely change the languages in common use, but even to make it almost impossible to trace their philological relationship.

Between Ocosingo and Palenque the path or track first ascends the northern spur of the Cordilleras, and, on reaching the summit, abruptly descends in a straight line over rocks, gullies, and mountain torrents, to the bottom of the Atlantic slope. A journey more terrible in its fatigues and difficulties than this descent is not easily imagined; and it is rendered more trying by the unbearable oppressiveness of the atmosphere. The forests and jungle are so dense, that there is no opening for the circulation of air; the trees and creepers crowd and close overhead so as to exclude sun and sky; and beneath, the thick undergrowth, matted and interlaced by creeping plants, presses and hems in on every side; and this is combined with tropical heat and a moist tropical vegetation. The Indians preserve a slight trail by cutting away with their machetes sufficient of the jungle to allow space for a man to pass; but this trail

rapidly becomes choked after the rains, and is further made impassable by the decay and fall of the forest trees. Fortunately in this jungle there are no tigers of sufficient size to cause danger, and the serpents which the country is said to abound with prefer the plains and the stony recesses of the ruins. On arrival at the village of La Palenque, I engaged three Indians belonging to the place to open a path to the ruins which are about six miles distant, and after taking two days' rest we followed up their track, and reached the great building called the palace. Here, in one of the corridors, the hammocks were slung and preparations were made for a lengthened visit. Palenque lies more deeply buried in the forest than ever. Since Stephens's visit in 1840 no further attempt has been made to explore the ruins, and they have been left to be hidden by the rapid growth of tropical vegetation. So completely have the ruins become part of the forest, that no parts of them, no temples or altars, are seen until absolutely touched. Trees grow out of the steps, walls, and roofs, as closely and luxuriantly as elsewhere, and the courts and quadrangles are concealed by huge plants and grasses over 12 feet high. The labour of examination is thus made very great. On my arrival I found that the Indian guides had opened out the steps, the quadrangles, and many of the carved slabs, and thus the palace was fairly open. In a similar way they subsequently cleared the way for an examination of all the other buildings.

The term "cities," as applied to Palenque, Ocosingo, Uxmal, Chichen-Itza, &c., is a serious misnomer. The ruins found in these places are almost exclusively structures raised for religious purposes, and their existence in such colossal forms proves how great was the power of the priesthood and chiefs, and how superstitious and servile were the masses of the people. The chief stone building of Palenque, commonly called the palace, but which, from its construction, its quadrangles, corridors, and cells, has more the character of a large monastery, is built upon a raised platform, and is related in design and dimensions to the chief structures at Uxmal in Yucatan. Around the palace are five artificial mounds, with an average height of from 50 to 60 feet. The mounds are rather steep, and seem to have been at one time faced with steps made of squared slabs of limestone. At the top of each of these mounds is a small temple or altar. In all, the same plan of construction is followed; all too are built with some reference to the cardinal points, particularly the east. The palace and the altars are built of slabs of limestone, brought from the adjacent hills. The extent of ground covered by these buildings and mounds does not exceed 800 yards square, or less than half a mile in all directions from the palace;

and in fact none of the ruined sites much exceed or come within these dimensions. Palenque and the other ruined structures of Central America should be considered and traced in the same manner as a large modern convent. The Spanish churches in the same region with their quadrangles, courts, and conventual establishments attached to them, are only another form of the same general religious idea. It is quite probable that a large population once dwelt near their temples; and there are evidences of stone bridges spanning the stream that runs by Palenque which support such a theory. Such a population would have dwelt in huts similar to those now used by Indians—huts thatched and made of a sort of cob, like our Devonshire cottages. These would of course soon fall into ruins and crumble into dust. In Yucatan, in places where, since the conquest, thousands of huts have been known to exist, and when the country was known to be teeming with population, not a vestige of habitations remains—nothing save great mounds, and altars, and temples. The same is no doubt the case with Palenque. Great care, however, should be taken with respect to assuming any data of population because of the prevalence of these mounds. About 20 miles from Palenque I found numbers of them evidently much more ancient than Palenque, and in positions like those in parts of the Mississippi valley, which, being subject to overflow (or at least to floods reaching their bases), did not admit the supposition of a surrounding city. These mounds, now alluded to, are only in appearance conical tumuli; but the fragments of hewn stone on their slopes, and the occurrence of idols, are evidences that they were of a similar character to those at Palenque—Palenque being, in fact, the chief of the religious structures of that region.

It is beyond the purpose of this paper to enter into details respecting the construction of the buildings, and therefore I shall only briefly draw attention to certain problems suggested by them. The first of these is the much-vexed problem respecting their antiquity; and this, in the absence of all tradition or history, has to be examined through the evidences of the buildings themselves. These are still in a very perfect state of preservation. In the palace the colours on the stucco are still unfaded, and the angles or edges of such of the walls as are composed of rubble and mortar are still quite sharp, and in no places have the roofs fallen in. But then there is evidently a singularly preservative character in the climate, for I found the names of Stephens, and Catherwood, and Pawling, which were written apparently with a bit of charred wood on the inner surface of the entrance archway, as fresh as when first done in 1840. It has to be remembered, that the great destroying agents of ruins do

not exist in the tropics, viz., frost and thaw; but, on the other hand, there have to be considered the action of tropical rains, and the action of tropical vegetation. After examining the condition of the outer walls, and also the roofs, out of which grew trees as tall and wide-spreading as any in the forest, I came to the conclusion that these agencies were certainly injurious, but also certainly protective; for in many instances walls and towers have been saved from falling by the twining and grasping of the roots and creepers which in some instances form a strengthening net-work. It must be admitted that it is difficult to form a decided opinion, but the evidence, as far as it goes, is against a great antiquity. The age of Palenque may be partly estimated by the ages of the temples in Peten and the southern districts of Yucatan: these are of the same character as those of Palenque, and were certainly in use when the Spaniards invaded the country. Palenque was then deserted, perhaps owing to famine, and it is evident from its style of construction that it was built at an earlier period. In fact, with perhaps the exception of Ocosingo, it is the earliest of all the ruined cities of Central America; but, even allowing for this, it is not necessary to assign it an earlier date than a few centuries before the Spanish Conquest. Another most difficult problem to decide is, how the builders were able to chisel out of the very hard limestone their idols and their engraved figures. Nothing can be finer than their sharpness of outline, depth, and clear definition; and yet, with what instruments were these carved? Their only metal was copper, and their sharpest weapons were made from obsidian. We must suppose great labour, care, and time. The raising of the enormous platforms on which to build their central buildings are evidences of a great labouring class, and a great subservience to their idols and their priesthood. In my journey through Yucatan, I was more struck with this fact than in Central America. The power of the priests and chieftains, and the terrors of the sacrificial altars, where so many human beings were daily offered up as sacrifices, and where the surrounding population daily saw the bleeding hearts of the victims torn out and dashed before the idols, were of such a nature as to render that population servile and cowering. There was doubtless a time when the Yucatan Indians must have been chiefly employed in raising altars and carrying heavy blocks of stone from great distances for their temples and platforms, a service very similar to that which the Egyptians were forced to perform when building the Pyramids. Yucatan is a small province, not fertile, and not sufficiently watered, and subject to famines, and yet it absolutely abounds with these so-called ruined cities. Uxmal is not the

most important of these, although the best known; and yet Uxmal represents incredible labour. The mere platform upon which the great Casa del Gobernador is built is at the summit 500 feet square, and is raised to a height of 50 feet. The adjoining great altar, called "the House of the Dwarf," is placed 60 feet above the plain. The carvings out of the solid stone which cover the face of all the buildings at Uxmal and other Yucatanese temples represent the highest point to which the skill of the American Indian race has ever reached; and the structures themselves are evidences of very considerable architectural taste and ability. The descendants of the builders still exist in various parts of Yucatan. Even a few of the descendants of their caciques are yet in the south of the province. All of these bear the unmistakable features of the race. Near Palenque I met with two Indians, the last of their family, who traced an unbroken descent from the ancient Palenquians, and these had those same remarkable features as are represented on the bas-reliefs of the palace. The descendants of the labouring population which dwelt in these provinces when the ruined cities were flourishing still remain there, and are probably not much changed in character. Wherever I have found them in secluded villages, under the government of their own native headmen, they are honest, mild, simple, and intelligent. The most remarkable fact, with all is, that they have not the slightest traditions of their past history; and they have even forgotten the incidents of the Spanish invasion.

There is very much that is interesting in the country of which this paper is so briefly treating (not only with respect to the ruins and the history of the past, but also with respect to the present inhabitants, their habits, customs, and superstitions), but these cannot be sufficiently discussed within the present limits.

XII.—*Account of the Island of Minicoy.* By Captain J. P. BASEVI, R.E., F.R.G.S.

MINICOR (strictly Minnkai) is a small coral island, dividing the 8th and 9th degree channels in 73° east longitude. In shape it somewhat resembles a crescent, the concave part facing the north-west; the total length is about $6\frac{1}{2}$ miles. The northern half of the island is very narrow indeed, being in no place more than 200 yards broad, but the southern portion is wider, and averages 600 yards; the greatest breadth is not more than 1000 yards. The lagoon is on the west side, and has a

maximum breadth of $3\frac{1}{2}$ miles; the reef which eneloses it on the west is always bare at low water. The depth of water inside is very variable, but probably does not exceed 8 or 9 fathoms; towards the southern end the lagoon is very shallow.

The principal entrance is at the north-east extremity, where there is a depth of 12 feet at high water. There is no surf on the bar at any season, but the channel is narrow, and there is a nasty cross surf on the eastern (island) side, which has to be avoided. There are three anchorage grounds, where vessels drawing too much water to enter the lagoon can lie; none, however, are good. The *Sir John Lawrence* anchored in about 15 fathoms off the north-east end of the island, but there is merely a narrow rocky bank here, and it would be unsafe in bad weather. The best anchorage during the north-east monsoon is on the west of the reef a little below the middle of the island, where for a considerable space the soundings do not exceed 10 fathoms; it is about a quarter of a mile from the reef. There is a narrow passage through the reef near, which is used by fishing-boats; it is not more than 12 or 15 feet broad, and about 6 feet deep. The third anchorage ground is on the east of the island nearly opposite the village (which is, however, not visible from it), where the depth of water is said to be 20 fathoms. There is a good landing-place in fine weather close by, the only possible one on the east side of the island, where the surf is always very high. During the Abyssinian expedition a steamer from Madras lay here for several days to undergo some repairs. There is a very small detached island at the south-west end of the main island, half a mile to north of which is a third passage into the lagoon; it is of the same description as the second one just described, but still narrower. The rise of tide, at springs, is rather under 3 feet.

The island is elevated only by a few feet above the mean level of the sea, and the central parts are, I conceive, if anything below that level. Along the east coast, opposite the village, a high bank has been raised for protection against any encroachment of the sea, which the present inhabitants say was built several centuries ago; the bank is over 20 feet high in parts, and extends for quite two miles, if not more. There is a natural bank thrown up by the action of the sea, which is difficult to be distinguished from what may have been artificially constructed. The whole of the island is covered with coco-palms, which are the chief source of wealth to the inhabitants, all of whom have their own trees, the rich as many as 2000. Away from the village, the undergrowth consists chiefly of a prickly bush, called in Hindustani "*kéora*" (*Pandanus odoratissimus*); it has a large white flower of a strong but agreeable scent. The "*kéora*"

is very common along the back waters in Travancore, and I have also seen it occasionally in the Deccan on the banks of tanks.

The village of Minicoy is situated nearly in the middle of the island, on the west side; it is half a mile long, and must contain at least 300 houses, arranged in lanes parallel to the water. The houses are invariably built of coral rock, cemented with lime, and are thatched with palm-leaves; every house stands in a separate compound, the divisions of which are of coco-leaf matting, and the entrances into the enclosures are shut by a hanging mat of the same material. There is abundance of fresh water on the island, almost every house has a separate well; it is slightly brackish, but not at all unpalatable. The people asserted that good water could be found close even to the edge of the lagoon, but I did not test the truth of this. Besides the wells there are a number of good-sized tanks revetted with masonry, in different parts of the village. In the northern and southern portions of the island, water is only found in a few places. There never has been, in the recollection of the present inhabitants, any scarcity of water.

The people are Mahometans, and are of the same race as the Maldives; they speak the same language, called Malikh or Malkee, and occasionally intermarry with them. They are now, and have been for the last 200 years, under the Rajah of Cannanore, having voluntarily placed themselves under his rule to obtain protection against the Malabar pirates who used to molest them. The population, which exceeds 2000, is divided into five families or castes, viz., Malkoofan, Thuckooroofan, Thuckooroo, Kulloo, and Raviree. The Malkoofans are the owners of the island, which is supposed to have been called after their women (Manika, feminine of Manikoofan); the women of this family wear a flat flowery gold ear-ring, which may not be worn by women of the other castes. The next class in rank are the Thuckooroofans; the distinguishing mark of this family is a gold wire ear-ring, strung with beads. The women of both these classes are to some extent educated. The other classes are foreigners; their women wear black thread ear-rings. All classes are, in other respects, similarly dressed. The dress of the men is the same as on the Malabar coast; the women wear a long jacket, reaching nearly to the feet, of a silk material, generally of a dark crimson colour, which is brought from Calcutta.

The men of the first two families do no work; the others work as sailors, and fish, but on land do no labour. Every description of land work is done by the women, who clear paths through jungle, collect firewood, pick up coco-nuts, make coir, sugar, &c. &c.

No man is allowed to have more than one wife, although there are two or three hundred more women than men. Even the head man of the island, Ali Malikan, has only one wife, although he has no son by her. When strangers come to the island the unmarried girls sometimes send proposals of marriage to them; my native doctor, who obtained for me the chief part of this information, had an offer of marriage soon after our arrival, conditional, of course, on his remaining on the island. The two first families only intermarry with each other, also the next two families intermarry, but the Raviree can only marry amongst themselves.

The men are excellent sailors; their fishing-boats, which are the best I have ever seen on any of the Indian coasts, are very fast, though the sails are almost entirely of coco-palm mattings. When the Peninsular and Oriental steamer *Colombo* was wrecked on Minicoy in 1864 (?), one of these small boats carried the intelligence to Cochin. They have 12 small ships, called "odies," which belong to the head families; in these they trade with Calcutta, Balasore, Ceylon, and Malabar. In navigating their vessels they use English nautical instruments, quadrants, chronometers, and compute out their positions by the aid of Norie's *Treatise on Navigation*. Captain Moresby, when surveying the islands, taught one of the men who was in his service, and this man, now old, instructs the others and has a small school of navigation. The people use English figures, having none in their own language. Most of the men speak Hindustani, but do not speak much Malayalim or Tamil. The inscriptions on their tombstones are in the Arabic character. At the back of the village the people have their gardens, in which they cultivate plantains, limes, betel, palms, pan, the breadfruit and papaya, and a few vegetables. No kind of corn or rice is grown, but around a few houses I saw a little "jowari." All their food—rice, dal, ghi, &c.—is imported. The chief products of the island are coco-nuts, coir, cowries, sugar made from coco-palm toddy, and salt fish. The coco-nuts, coir, and cowries, are generally taken to Calcutta, the salt fish they take to Ceylon. It is prepared by being first boiled in two parts of salt and one part of fresh water, then dried, and finally smoked. If buried in the ground, it keeps good for years. I tasted a piece, said to be two years old: it was nearly as hard as wood.

The coir in this island is prepared in a different way to the mode practised on the adjacent islands. The husk is soaked in *fresh* water, instead of *salt* water, for a month or more, and then beaten out with wooden mallets on short wooden planks: it is then washed in salt water and spun into twine. All this work, from collecting the husks to the manufacture into twine,

is done by the women ; the ropes are made by the men. The upper classes buy the coir from the others, giving in exchange rice and clothes. The Rajah of Cannanore possesses the whole of the southern portion of the island ; his revenue from it is entirely obtained from the sale of coco-nuts and from cowries ; of the latter he has the monopoly. The women collect the coco-nuts for him and are allowed to keep five out of every twenty they collect. The Rajah has nothing to say to the coir, and consequently is popular in Minicoy ; whilst on other islands which belong to him, where he has the monopoly of the coir, the reverse is the case.

There are six cases of leprosy on the island ; they live in a separate village, about two miles north of the main village, near to which they are not allowed to come ; they have their own fishing-boats. The leprosy is, I believe, of the worst type. The other principal diseases from which the people suffer are ophthalmia, rheumatism, itch, dropsy. Some five or six years ago the small-pox was brought over in one of their ships, and a very large number of people, about 300 I was told, died. All the sick were moved to the small island at the south end of the lagoon, and those who died are buried there. A native doctor was afterwards sent over to the island by the Rajah of Cannanore who vaccinated all the people. This small island is used as a sort of hospital for small-pox ; any sick are moved there, and tended by persons who have already had the disease.

The climate of the island must be very equable, from what I can learn. One very disagreeable peculiarity of the place is the legions of mosquitoes, which are the worst that I have ever met with ; they are very small, but very pertinacious, and bite through anything. The natives all sleep in curtains made of long-cloth. One of the punishments for ordinary offences is to lock up the culprit all night naked in a house. Criminal offences are said to be rare.

There are but few animals on the island. The people keep no cows, sheep, or goats, and no dogs. They keep cats, and have plenty of fowls and ducks. I saw a flight of teal the first evening, but never again. To make up for the mosquito plague the island is wanting in some of the pests of the mainland ; there are no tigers or venomous snakes, no scorpions or centipedes, and no crows ; but the island is overrun with rats, who live up in the coco-trees and destroy, it is said, three-fourths of the produce. The people tried to destroy them by poison, but without success, and now they make no efforts to get rid of them. Turtle abound, but are not eaten by the people.

The
Island of
SAGHALIN
from Russian Authorities
to accompany the Paper
by
Colonel Veniukof

English Miles
0 10 20 30 40 50
Geographical Miles
0 10 20 30 40 50

Soundings in Fathoms



XIII.—*On the Island of Saghalin.* By Colonel VENIUKOF.
Translated from the Russian 'Voyenni Sbornik,' by Captain
SPALDING, 104th Regiment.

EVEN in the year 1787 Lapeyrouse, the first educated traveller who observed Saghalin, thought that this country was an island, as it was represented by Kämpfer and D'Anville, relying on the Japanese accounts of Karafuto. However, for a long time, viz. till the year 1857, it was represented on English maps as a peninsula, united with the shores of the Amoor country, by a narrow isthmus at the place where we now know to be situated Capes Mooravieff and Lazareff. The cause of such an error was the uncertainty of Broughton, who, in 1797, explored the Channel of Tartary, and, having remarked the diminution of its depth, and also the narrowing of the shores from Castries Bay towards the north, admitted the existence of an isthmus, or sandy strip, where actually exist the straits 4 miles broad. The cautious Krusenstern, though he did not entirely follow the example of the English navigator, filled the straits up with a shoal, so that the final acceptance of Saghalin as an island, entirely separated from the continent, was accomplished in the years 1849–1852, that is, from the time of the hydrographic labours of Captain Nevelski, although its figure as an island was sufficiently acknowledged from the time of Lapeyrouse, and especially of Krusenstern, of whom the latter fixed and calculated not less than 27 astronomical points on it.

The modern topographic, and in part hydrographic, labours in Saghalin belong exclusively to the Russians and Japanese. The latter possess a large general map of the island, scale 6 miles to an inch, composing part of the special map of the entire Japanese Archipelago, published by the Tycoon's government. But the Japanese have evidently kept to the littoral regions, and not penetrated the interior, which is thus left blank. Besides this, the outlines given by them are not always correct. The Russians, after Krusenstern, first visited Saghalin in 1807, when Lieutenant Koostoff, with permission of the ambassador Riazanoff, even took possession of it for Russia. But this first step of ours was unsuccessful, for not later than six years afterwards, at the time of the captivity of Golovin, we were obliged to acknowledge the act of Koostoff's to be "unauthorised," that is, we formally renounced our rights to Saghalin, where, meanwhile, since 1780, the Japanese made their appearance. After the return of Golovin from captivity, Saghalin, so to speak, belonged *de jure* to nobody, although, by some strange confusion of ideas, European maps continued to represent it as

belonging, the northern half to China, and the southern to Japan. The mere presence on the island of Japanese was no motive for this, for the natives, Ainos and Gilliacks, were never Japanese subjects, and the Japanese fishermen lived only on the shores, and that principally in the summer, betaking themselves in the winter to Hakodate and the island of Nipon. The Chinese had even less right to count a part of Saghalin theirs: their connection with this island was confined to the rare visits of certain traders from the Amoor for the purchase of furs. Generally the relations of the two East Asiatic powers with regard to this island resembled in many points those of Russia, Norway, and Holland, with regard to Spitzbergen.

In 1849, Captain Nevelski and his fellow-labourers, Boshniak, Rudanooski, and others, made the first exploration of the estuary of the Amoor, i.e. the northern part of the Channel of Tartary, and observed parts of the neighbouring shores of Saghalin, where they discovered the Bay of Baikal. But the attention of these explorers was turned more to the north-eastern shore of the Amoor country than to the island which blocks the mouth of the great river. And although in 1853 some posts were established in Saghalin, they were quickly withdrawn on the outbreak of the Crimean War.

In 1854, at the time of the negotiations with the Japanese in Nagasaki, Saghalin was recognised as "still unpartitioned" between Russia and Japan, and such it has remained *de jure* to this day, in virtue of the second treaty of the 26th of January, 1855, and of the special convention of 1867.

Scarcely, however, had the Crimean War concluded when the Russians reconstructed their posts in Saghalin, and, among other things, settled in the most southern part of the island, at Aniva Bay. The Japanese did not oppose this, but, on their side, constructed some posts, as if for the protection of their fishing-stations or huts, in part scattered along the shore, especially in Aniva Bay and on the western shore. Their colony was afterwards strengthened.

In the year 1853 the Russians opened the coal-mines at Dooi, or Jonquièr Bay. A Russian post was soon founded there. From it, and also from Mooravieff at Aniva, were executed investigations of the whole southern portion of the island, at which time, in 1856-7, were made the astronomical determinations of Rushkoff at Dooi, Pogobi, and Aniva, which connected them with Nikolaieff.

Afterwards, in the course of thirteen years, the Russians made from time to time explorations in different parts of Saghalin, viz. six points on the shore were determined astronomically by Staritzki; Shebunin, Belkin, Paulovich, and others, plotted out

instrumentally and by the eye, both the southern peninsulas, by which the Bay of Aniva is enclosed, the eastern shore as far as Patience Bay towards the north, the western as far as Crillon and Pogobi, the valley of the river Poronai, and some cross-roads, &c.; meteorological observations were made in various part by Läger, Dobrotvorski, and others, during their travels, who added many botanical, geological, and ethnographical details to those which were already known through the labours of Lapeyrouse, Krusenstern, Davidoff, and Golovin. Lastly, the government commission, of which Vice-Admiral Skolkoff was president, gave some details of the economical condition of Saghalin, which comprised a series of investigations, which, although incomplete, are sufficient to give an idea very proximate to the truth.

GEOGRAPHY AND HYDROGRAPHY.

The principal series of astronomical determinations belongs to Krusenstern and Horner, who determined and enumerated 27 points from the existing co-ordinates. Some of these determinations, for instance, Cape Crillon, have turned out to be very satisfactory; others are less trustworthy, because made from a ship and with chronometers inferior to the modern ones. Quite lately Rashkoff and Staritzki have determined eight more points, so that the position of the island is now well known. Thus we know that Saghalin lies between the same degrees of latitude as the countries between Kalooga and the Isthmus of Perekop, and has a length of 514 miles. Its greatest breadth, a little to the south of Sertooinai is 78 miles, and its least, at Koossoonai, 17 miles. Its surface consists of 1065 square miles, *i. e.* equal to the extent of the province of St. Petersburg. The greatest indentations of the soil in a horizontal direction are in the south and partly in the middle of the island, where Aniva and Patience (Tarpenia) bays stretch in. The northern and larger part of the island presents an almost exact parallelogram, in length about 288 miles, in breadth 54. Outside the island lie the reef Tinden, the island Monneron, and the rock Danger (Opasnost). Of these the first and last deserve the special attention of mariners, on account of their danger to ships during the foggy weather which is so frequent in these waters. With reference to the seas which wash the coast of Saghalin, it is very important to remark that neither the Pacific Ocean, nor the Sea of Japan, nor that of Okhotsk, form here *one bay which could serve as a harbour for vessels*. The two largest inlets of the sea, *viz.* the bays of Aniva and Patience, are quite open to many winds, and are too broad to serve as trustworthy roadsteads, so much the more that ships can rarely go nearer to the shore than one mile

on account of the shallowness of the water. And the small inlets—Kooigda, Baikal, Nive, Viakhtoo, Dooi, D'Estaing, Mauka, Mordvinoff, Lossossia, and Bousse—are all insufficient in the sense of ports. The northern ones, *i.e.* the first six, are frozen the greater part of the year, and are open to many winds; and the southern ones are also not sufficiently protected, as their shores are not shelving enough. The best port for the stay of ships is Dooi, but it is not sufficiently explored, and is frozen during several months. The next in convenience, Bousse, is united to Lake Tabootchi by a canal 50 feet deep; the former affords a secure asylum for ships: but even this lake is not deep enough; and before the mouth of the canal, about the channel, on the bar, the greatest depth is 12 feet at high tide. In one word, Saghalin, as far as is known, has not one sufficient harbour for even the summer stay of large ships; in winter, to the disadvantages of this sort of shore are added icebergs along the shore, *i.e.* heaped-up ice-fields, which are formed in still and frosty weather and thrown up on the shore when it is rough. Sometimes these icebergs extend tens of fathoms, and consequently make it almost impossible to construct artificial harbours, whose bulwarks would be subjected to rapid destruction.

The straits between Saghalin and the shores of the Amoor country deserve particular attention in the sense that, by their nature, the character of the intercourse between this island and the continent of Asia is decided. In the first place, these straits are frozen for three or four months in the year, and, consequently, the possibility of direct communication between its shores is opened, even if the sea were not generally commanded by us. Secondly, it is known that the channel of the river Amoor, near its mouth, is divided into three branches. One runs to the north-east, *i.e.* towards the Sea of Okhotsk, but, not reaching it, is lost in shallows; the second goes straight to Saghalin, but also does not reach the Channel of Tartary; and the third alone, stretching toward the south to Cape Lazareff, leads to the Sea of North Japan. Therefore, strictly speaking, the straits of Mamio Rinzo, 5 miles broad, must be possessed to attack from Saghalin ships issuing from the Amoor. From the Sea of Okhotsk and from the north-west shores of Saghalin it would then be impossible to penetrate directly to the Amoor, but it would be necessary to descend to latitude $52^{\circ} 25'$, *i.e.* to arrive again in sight of Cape Lazareff and then tack round to the north-north-west. Thus, if there is a point in Saghalin which may be called the key of the Amoor, it is in the close neighbourhood of Pogobi, but by no means the whole island, which only commands the Amoor as England commands the mouths of the Seine, Scheldt, and Rhine. On this account the Straits of Mamio

Rinzo have a double importance, because it is possible to pass through them to the Amoor, and also to the north-west shore of Saghalin itself; inasmuch as northward from these straits goes a direct channel from the Sea of Japan into the Sea of Okhotsk, a little south of Cape Golovacheff, touching the Saghalin shore.

TOPOGRAPHY.

Down all the length of the island, almost on meridian 143° , extends a line of heights, sometimes attaining the height of two or more thousand feet, but never covered with perpetual snow, as might be expected from the severe climate of the locality. The highest peaks have their summits of bare rock, or covered with brushwood. But the majority of the mountains are covered from foot to summit by thick forests, in great part of the maple class. In the northern part of the island, as far as latitude 50° , the chain, originally forming rocky peaks, afterwards spreads out into the country, and forms a more gradual slope to both seas, keeping, however, nearer to the Channel of Tartary, *i.e.* to the west of the mathematical axis of the island. Here it bears the appellation Vakazey. Southwards of 51° or 49° , two parallel chains are sharply defined, the western and eastern; in the latter of which is found Mount Tiana, which stands out prominently amongst the others. But the western chain, as a continuation of the Vakazey, but stretching farther south, must be considered as the main one. Its slope to the Channel of Tartary is steep, but to the interior of the island gentle. Beyond the mouth of the river Poronai, to the south, this chain is the only one, and runs, now higher, now lower, to Cape Crillon itself, where it falls abruptly into the sea, as a rocky peninsula (the end of Cape Crillon being separated from the peninsula by a saddle, wherefore it appears an island at a distance). Its greatest depression occurs in latitude 48° , *i.e.* facing the post of Koossoonai, which is the narrowest part of the island. The highest peaks of the southern half of Saghalin are Ichara (4000 feet), Koshika, and Bernizet. To the south of $47^{\circ} 20'$, more to the east of the principal chain, we find two others, parallel to its ridge, which forms a peninsula, ending in Cape Aniva, also rocky, as Crillon. The saddle between the first ridge and the principal chain is occupied by the valley of the rivers Soos-sooi, Tukoi, and Naiboochi, but between the first and second ridges is a system of lakes with high banks.

On account of the unexplored state of many parts of Saghalin, we do not know the exact details of its topography, and, among other things, we cannot enumerate all the passes through the range which runs along the whole island. Although the insig-

nificant height of this range leaves no doubt that it is passable for single individuals almost everywhere, yet nevertheless there are passes or saddles between the mountains, recognised by all, by which travellers pass from the western side of the island to the eastern. The most important of them at present is that which leads from the post Dooi into the valley of the river Poronai, and thence to Koossoonai. Through the first of these passes lies the path, which extends along the river Poronai to Tarpenia Bay, and thence by the eastern shore of Saghalin to the post Naiboochi, and further, up the river Soossooi, to Aniva Bay. The pass of Koossoonai is a very low saddle, where carriage communication with the post Manuyeh could be easily established. To the south of it are known the pass Belkina from Manka Bay, up the river Lintota, which flows into Lossoss Bay; the pass Belkino-Lopatinski, from the river Koomoonai up the river Naiboochi, and some others in the most southern extremity of the island. In the northern part of Saghalin there are some cross-paths, which are frequented by our merchants from Nikolaieff, who penetrate here to the Bay of Ni and other spots on the eastern shore; but these paths have not yet been explored.

The chief rivers of the island, Poronai and Timir, take their commencement almost in lat. $50^{\circ} 40'$, not far from each other, and flow, the first to the south, and the second to the north, neither more than for 106 or 112 miles. They are navigable for boats; but the more known of the two, the Poronai, has a bar at its mouth, so that exit from it is rendered difficult. By means of a separate branch this river communicates with Lake Taraika, which, in its turn, is united by a channel with Tarpenia Bay.

In general, the lakes of Saghalin are distinguished by this peculiarity: that they are united with the sea by means of small, though sometimes deep, channels. We might therefore term them in some instances "lagoons" (?), as Taraika, Tabootchi, Koigda. But lagoons, in the general acceptation of the word, are lakes occupying plains near to the sea; whilst the lakes of Saghalin are often surrounded by mountainous shores. Generally they are basins of very small dimensions, as is evident from the following:

Lake Baikal	..	..	..	23	square miles.
" Taraika	..	..	..	28	" "
" Tabootchi	..	..	..	15	" "
" Toonaicha	..	..	..	37	" "

The last is the largest in the whole island, and occupies a space equal to St. Petersburg. Small lakes, belonging to the actual type of lagoons, are very numerous in the north-west part of the island, opposite the mouth of the Amoor.

NATURAL PRODUCTIVENESS.

Schrenck adduces some instances of the former habitations of marine animals in places which are no more than 8 or 10 feet above the level of the sea, from which we may conclude that the soil of Saghalin has been elevated in the course of ages by volcanic action. There are no volcanoes in Saghalin, although it forms the prolongation of the Japanese volcanic group. It contains rich stores of coal, which confer on it not only a present but also a future importance. Deposits of coal are now known in the following places: in the extreme north, 10 miles from Kooigda; in the middle and southern parts, near the rivulets:

	Latitude.	
Tonga.. .. .	51	15
Kjoospai	51	5
Minginai	"	"
Choorkunnai	"	"
Near Dooi	50	55
„ Kazakevich Bay	50	18
„ Vozdvijenie	49	52
„ Post Sertoonaï	49	30
„ Gulf of Lissowski	49	16
„ Cape Ootakoo	48	1
„ „ Oossoo	47	39
On the river Nayassi	46	28

all along the western shore of the island. In the interior, *i.e.* far from the sea, we know of coal deposits on the river Koomoonai ($47^{\circ} 35'$), and on the eastern shore, near the river Naiboochi, and, it is said, near the Gulf of Ni. Some of the mines are worked, as for instance, at Dooi and Sertoonaï, and in the first instance, success is facilitated by the fact, that the strata of coal from the denudation of the shore near the sea are inclined upwards, not downwards, which lessens the affluence of water from the ground. The quantity of coal in the Dooi bed amounts to 72,500 tons, from which it is evident, that for working out the mine in one year, given a good construction of shafts and galleries, from 200 to 300 men would be necessary; but it is understood that the total mass of coal in Saghalin will suffice for many thousand workmen and many years. As the prevailing formations in Saghalin are chalk and Tertiary, it is evident that, geologically, its coal is lignite; but according to Macdonald it contains from 60 to 70 per cent. of pure carbon, and therefore belongs to a good class of mineral fuel. In reality, in the ports of the Eastern Ocean, only the English, Newcastle, and Cardiff are preferred to it; Australian and Japanese coal sell much

cheaper, for instance, 5, dollars per ton, when Saghalin coals cost 7 or $7\frac{1}{2}$ dollars.

Among the other natural riches of Saghalin, the woods, hunting-grounds, and fisheries, occupy the first place. The woods of Saghalin are composed chiefly of the Norway spruce-fir, larch, Siberian silver-fir, some pines, but mostly deciduous trees from the birch to the elm. In the southern part of the island this forest vegetation is arranged in zones, viz. from the level of the sea to 700 feet elevation, deciduous trees; from 700 to 1000 feet, conifers; higher, to 1200 feet, again deciduous trees (birch), and lastly, yet higher, cedars. The most stately forests are met with on the south-west side of the island, where generally the vegetation is finer, containing 550 species of phanerogams alone. However, it is difficult to estimate the sale for the wood procured from them, as Japan close by is very rich in wood, and in the Maritime Province the greater part of the country is occupied by them. Of sawing-mills, pitch and paraffine manufactories, meanwhile, there can be no question. As to hunting, it at present composes the chief source of wealth to the natives, Giliacks and Ainos. The sable, otter, fox, and bear skins obtained by them in the chase are eagerly purchased by the Japanese, American, and by our merchants, partly in person and partly through the Giliacks.

Regarding the fisheries, it may be said that they support the native inhabitants of the island, and, besides this, are a source of great profit to the Japanese, who import large quantities of fish, principally in a dry state. Near the shores of Saghalin, whales and seals also abound; but foreign whalers only catch the former; the natives kill the seals. Formerly seal-catching was very flourishing on these shores, and now and then a single trader could obtain as many as a thousand skins on one bank. Now it is hopeless to expect such a take. Seals are principally met with on the eastern and northern shores of the island.

Organic nature cannot be rich and various in Saghalin, on account of the climate of the island. In fact, the neighbourhood of the Sea of Okhotsk and the cold parts of Eastern Asia impresses everything with a very harsh aspect. Even in the middle of May snow lies on the mountains, even in the south of the island, whose latitude is the same as that of New Russia. Thermometrical observations in Koossoonai, the most trustworthy of any yet made in Saghalin, show that here, in latitude 48° , the mean temperature is found to be 34.70° Fahr., the same that is met with in Finland, itself in latitude $64^{\circ} 13'$ (Kakhna), and in Norway even within the Polar Circle. The hottest month, July, has a mean temperature not higher than 62.37° Fahr.; the coldest, January, 14° Fahr., and, with exceptional frosts,

31° Fahr., where in the summer the thermometer is never higher than 77° Fahr. The harshness of the climate is increased by its extreme dampness, its fogs, and by the abundance of rain in summer and snow in winter. In Koossoonai, which is situated advantageously enough—for it lies on the western shore, looking towards the continent, from which dry winds blow—there are 149 wet days and 104 gloomy, *i.e.* in all 253 dull days in the year, but on the eastern shore the sun appears still more rarely. Also not unfrequently the rain or snow falls for days together, whence in winter immense snow-drifts are heaped up, and in summer mud is formed which does not dry up before the rain which follows falls. It is evident that the climate of Saghalin does not differ much from the climate of Archangel; and in this respect the open basin of Aniva Bay does not form an exception, for the cold winds from the Sea of Okhotsk penetrate freely into it through the saddle in the mountains. The spring is very prolonged, as for melting the snows, from three to five arsheens deep, much time is required, in consequence of which the valleys between the mountains do not become fit for sowing till the middle of May. Therefore it is impossible to doubt that the population of Saghalin will always stand in need of imported corn. This is the case even now, when the population does not exceed 15,000 to 16,000 souls: the Russians receive their corn from Russia, around the world, the Japanese and Ainos their rice from Japan. Kitchen-gardening, *i.e.* the cultivation of cabbages, potatoes, and cucumbers, can take place; likewise cattle-breeding, at any rate the rearing of mountain breeds, provided the pastures were cleared; for there are few natural meadows, whilst in the woods numerous insects harass the cattle in summer.

The snows in winter, the rains and mud in summer, combined with the mountainous nature of the country and abundance of wood, will always form serious obstacles to the construction of good road communications in Saghalin.

POPULATION.

The population of Saghalin consists of Russians, Japanese, Chinese, Giliacks, Ainos, Orochons, and some persons of European and American extraction, in all about 13,000 to 14,000 souls.

1. The Russians, to the number of 2500 to 3000 men, are almost exclusively military, belonging to one of the East Siberian line battalions, or to the artillery and local companies; or indeed they are exiles, with the addition of a small number of peasants and traders. They live at the following places:—

At the posts Dooi, Sertoonai, Koossoonai, Korsakoff, Mooravieski,

Taraika, Manooi, in the villages of Naiboochi and Takoi, and at Port Ni.

The following posts are the centres of local government:—Dooi, where the exiles are concentrated, and coal is worked; and Mooravieff, where the staff of the battalion is quartered, and official correspondence with the Japanese is carried on. The chief government of the island belongs to the military governor of the Maritime Province in Vladivostok. The Russian settlements mentioned above are as follows:—

At Dooi are the coal mines, which are worked by the hard-labour exiles. Part of them, having freed themselves from penal labour, are employed in kitchen-gardening. Even the convicts labour pretty much at will, because there is nowhere to escape to in Saghalin, and even the works themselves do not admit of a very careful watch being kept on each of the labourers. In the environs there is a village of from 25 to 50 houses.

Sertoonnai exists for the protection of private coal mines belonging to Messrs. Bauroff, Ekimoff, Krouli, Staritzki, Ellis, and Ash. Messrs. Ellis and Galpin at first obtained their coal by means of Chinese workmen, but were afterwards obliged to exchange them for Russians. At the end of 1869 they had sold about 4000 tons, 3000 of which were found ready excavated on the account of Bauroff. There is no later information concerning Sertoonnai.

Koossoonai has about 25 houses and a population of soldiers, who occupy themselves, not without success, in kitchen-gardening.

Korsakoff is on the rivulet Acatoovar, a little above its mouth, and a little to the north of the Japanese post of Koossoon-Katan. Hither it is proposed to transfer the headquarters of the line battalion, whose commander has under him all the other posts in the southern half of Saghalin.

Mooravieff, near Lake Tabootchi, which is united with the Bay of Bousse by a channel, was till lately the chief of our south Saghalin posts. The shallowness of the bar is the reason why its harbour is so rarely visited by merchant vessels; however, the foundation of maritime commerce has been already laid, and, in 1869, a schooner, belonging to a retired petty officer, arrived specially for Mooravieff from San Francisco. The goods brought by this schooner were sold much cheaper than those supplied by the traders of Nikolaieff.

The village of Takoi, on the rivulet of the same name, which flows into the river Naiboochi, lies in the midst of a fruitful valley, where barley, oats, rye, and even wheat, return good harvests. The village, in 1870, consisted of 15 houses.

The post and village of Naiboochi, of the same district as the

above, lie near where the river Naiboochi falls into the Sea of Okhotsk.

Manooi, of the same altitude as Koossoonai, and distant from it 17½ miles, along a sufficiently beaten track.

Taraika, near Tarpenia Bay and Lake Taraika: only a few soldiers.

At Port Ni there is not, properly speaking, a regular Russian settlement; but there are constructed huts for the Russian traders who arrive from Nikolaieff for the purchase of seal-skins and other furs.

The absence of government foundries in Eastern Siberia was the inducement to send our hard-labour exiles to Saghalin, who are here employed in excavating coal either for the fleet or for sale. To this end it was decided to send yearly 800 men to the island. But it appears that this number of men does not correspond to the present wants of the coal mines on the island; it is too large. The keep of the exiles, meanwhile, is expensive, and evidently there is no other exit from the dilemma than the shortening of their terms of labour, with permission accorded to them to settle at will within the limits of Saghalin, and live by their own labour. A certain number might be advantageously employed on works of fortification at the Straits of Mamio Rinzo, and in cutting wood and making pitch for the fleet. But the idea which has lately arisen, of letting out the exiles as labourers to private persons, is evidently unlawful, for this would be to abase and render hateful Justice herself, in whose name the government punishes the criminal, and to turn judges and rulers into dealers in men, and spreaders of slavery. Of the improvement of the criminals, of course, after this, there could be no speaking, for they would see in themselves henceforward but articles of commerce, and not labourers on account of government, and would justly become incensed against those who had infringed their "natural rights."

Communication between the posts on Saghalin and the Maritime Province is carried on chiefly by sea, but in the winter the traders travel by means of dogs, crossing the Channel of Tartary on the ice, near Cape Lazareff and the village of Pogobi. A land post from Aniva Bay to Nikolaieff is despatched sometimes on foot, and sometimes by dogs, along the eastern shore and the valley of the river Poronai, to Dooi, thence by the western shore to Pogobi, and then across the channel. On account of the scenery of the country, they generally send but two or three soldiers. Communication by sea along the shore is only open for six months, from April to October, although in Aniva Bay navigation is possible for ten or eleven, sometimes the whole year, but with great peril to ships sailing in winter.

The construction of even one main road, and two practicable cross roads, viz. from Aniva Bay into the valley of the Poronni, from Poronai to Dooi, and from Manooi to Koossoonui, might be executed by the exiles, and would be, on every account, very desirable.

2. The Japanese live in the southern part of the island, and do not extend farther on the western shore than Koossoonai, and on the eastern than Tarpenia Bay. The principal mass of their settlements is on the western shore, near Mauka Bay, and Siranoossi, near Cape Crillon, serves as a starting-point for their communications with Japan. In Aniva Bay, also, the Japanese population is considerable, and the chief point there is Koossoon-Kotan. In 1869, the Japanese government thought to strengthen this colony, and sent 500 souls to Aniva; but the arrival of the emigrants late in the autumn, and other causes, brought about the failure of the attempt. The chief object for which the Japanese settled in Saghalin formerly, and still more visited it in summer, was for fishing and trade with the Ainos; of late years they have pursued another object, not economic, but political: the increase of Japanese influence on the island *pari passu* with the Russian. They therefore follow the march of Russian colonization, and as soon as they learn that the Russians desire to colonize such-and-such a locality, they appear there with their own colonists. Thus there are corresponding Japanese posts to all ours south of 48° lat., for instance, Koossoonai (12 houses), at Korsakoff, and Mooravieff. The Japanese also desire to erect, like ourselves, settlements in the interior of the island, as at Tukoi; but we have not heard whether they have been successful.

All the Japanese in Saghalin are direct subjects of the Mikado, and not of the princes, and are ruled by local dignitaries who are subordinate to the governor of Matsuma.

3. The Chinese labourers hired by the American workers of the Sertoona coal mines, were, to the number of 100 men, imported, in 1868, from Hongkong, and landed at Sertoona. Whether they are still there is unknown. In any case, they are without families, having no idea of a permanent settlement in Saghalin.

4. The Giliacks inhabit the northern half of the island, as far as 50° 15' lat. They are hunters and fishermen, and partly traders, for they visit the southern part of the island in boats for the purchase of furs from the Ainos, in order to re-sell them to the merchants of Nikolaieff. They live scattered along the rivers, at a little distance from and near to the shore; the mass of their population may be said to be concentrated about the Bay of Ni. The Giliacks of Saghalin, as on the lower Amoor, are intrepid mariners, and might be trained for service on seagoing

vessels. In religion they are sorcerers (shamans); they have no education; they have no letters; their language is different from the Tungoozi, a dialect of which prevails in the basin of the Amoor, and also from the Kurili, which is spoken by the Ainos. The influence of the Japanese over them is insignificant, and is manifested rather by commercial ties with the Japanese in the south of the island. The number of the Giliacks is not known, but probably does not exceed 2000 to 3000 souls.

5. The Ainos inhabit the southern portion of the island from 50° lat. They are hunters and fishermen, and are abjectly dependent on the Japanese, to whom they are constantly in debt for articles of clothing, furniture, and rice. Article 3 of the convention of 1867 even confirms this state of things, and permits the conversion of the Ainos into Japanese slaves, for the Japanese could claim forced labour for debt. For the rest, politically, the Ainos are independent, and are directed in their own affairs by their elders. The Japanese oppress them; this calls forth complaints, frequently made at our posts, and thus, as it were, a double tutelage over the wretched people has sprung up; but except in the relations with the immigrants from Russia and Japan, the Ainos are meanwhile independent. The use of rice, of Japanese clothing (to a certain extent), of Japanese utensils, and their long intercourse with the Japanese, give to the Ainos the aspect of a people somewhat more civilised than the Giliacks. Besides this, they are better-natured. But, in reality, their differences are not great. Religion, manners, superstitions, customs, all bear witness to their patriarchal condition. The villages of the Ainos generally consist of a small number of houses; three or four, like the Yolds, or Goldi, of the Amoor. The construction of the houses reminds one of the Japanese. By every house there is a store for dried fish, on posts, away from the mice. Sometimes a rich Aino has two or three houses in different villages, where his wives live, whom he visits in turn. Formerly the Ainos have frequently waged devastating wars among themselves; whole villages have been destroyed, as Porotepooss-Kotau, near Lake Tabootchi. Besides this, the decrease in their numbers was assisted probably by the diseases imported by the Japanese, for instance, syphilis. At any rate, there are now in Aniva Bay only three small villages of Ainos, instead of the former eight large ones: in the valley of the Nainboochi may be seen the ruins of Aino villages, now deserted, &c. &c.

A small number of Orokaps, of a tribe similar to the Tungoozi, live in the mountains of the middle of Saghalin. They are chiefly hunters; when the chase of forest animals is unsuccessful, they occupy themselves in fishing. Their number is uncertain, but probably does not exceed 400.

Collecting these data regarding the population of Saghalin, we perceive that it consists of—

Russians	..	..	..	..	..	..	3000
Japanese	..	..	..	..	..	..	3500
Chinese	..	..	..	..	..	..	100
Giliacks	..	..	..	..	..	..	3000
Ainos	..	..	..	..	..	..	3000
Orokaps	..	..	..	..	..	..	400

Total 13,000

giving twelve persons to a square mile, and even this number is too great. All these figures must be accepted as approximate, almost conjectural.

As the chief occupation of this population is fishing and hunting, it is natural that the chief articles of the export trade of Saghalin should be furs and fish. The latter all goes to Japan: as to the furs, they are bought by the Japanese, especially by the Russians, and partly by the Americans. The chief trading places are Siranoossi and the Russo-Japanese posts at Aniva Bay. Trade is carried on chiefly by barter, and the following is an example of how goods are valued:—

For 14 doz. needles	} Is received from the natives:—
" 14 " buttons	..	..	..
" 12 arsheens of coarse cloth	..	..	..
" 9 " " red	..	..	..
" 3 flannel shirts	..	..	..
" 18 arsheens of white muslin	..	..	..
" 10 skeins of thread	..	..	..
" 3 lb. of beads	..	..	..
				40 otter skins,
				25 fox "
				37 sable "

Taking the ordinary prices at St. Petersburg for the above-mentioned articles, we perceive that for 35 roubles expended, furs to the value of 600 or 700 roubles can be obtained. The immense difference between these figures is all due to transit, commission, and the profits of the traders.

The total number of furs exported from Saghalin is estimated by Monsieur Furnhelm at 24,000 otters, 1300 sables, and 6000 foxes. The number of bear, deer, and seal skins is not ascertained. With the increase of the Russian and Japanese population in Saghalin, trade, especially in rice, flour, and European manufactures, must increase considerably: as far as is known, the enterprising American traders of San Francisco have discovered how to turn it to their advantage. The trade in fish, especially salmon and herrings, after salting in the European way, might be profitable to our traders, on condition, however, of a secure sea communication with Shanghae, whither coal

would be transported for local purposes, but fish and furs for transmission to Russia. But whether the Russian Steam Navigation and Trade Company, or the Amoor Steam Company would exclaim against this, it is impossible to say.

MILITARY SURVEY.

We have at present in Saghalin one battalion of infantry, two mountain guns, one local command (at Dooi), which are disposed in the following manner: two companies and a section of artillery at Mooraviesh, one company at Korsakoff and Naiboochi, one at Mauka Bay, one at Koossoonai and Manuyeli, the chief command at Dooi and Tarnika. But the companies, in their turn, are scattered in small detachments of seven or nine; and there are posts where there are not more than two soldiers, merely to prove to the Japanese the presence of the Russians in a given locality.

The military force of Japan in Saghalin is unknown to us, either as to strength or quality.

As to the strategical conformation of the country, we may remark:—

1. It lies opposite the mouths of the Amoor, but does not bar its entrance, not only because the Straits of Mamio Rinzo are not fortified, but also because in the northern half of the Channel of Tartary there is a channel from the Sea of Okhotsk, which, it is true, passes within view of Cape Lazareff, but not within gunshot of it. The fortification of the Straits of Mamio Rinzo, and the maintenance there, in case of war, of several armour-plated vessels (or the construction of torpedoes in the channel) would make Saghalin, or, more properly, the part of it about Pogobi, the key of the Amoor, and also unite inseparably the island itself with the Maritime Province.

2. Saghalin has not a single port which may be termed a safe place of refuge. This is especially applicable to the western shore, *i.e.* where ships destined to blockade the Channel of Tartary would be stationed.

3. Saghalin, on account of its climate, is incapable of supplying the necessities of life to the troops and the exiles, *i.e.* to the settlers; and even the agriculturists living there can scarcely have their corn regularly. The possession of Saghalin will be expensive in proportion to the number of the extraneous population introduced into it, who do not live on the corn raised there. However, the encouragement of certain occupations, such as fishing, cattle-breeding, hunting, may partly make up for this deficiency, and the extension of the coal mines and sale of

the coal abroad may cover the expenses of government in the maintenance of the exiles.

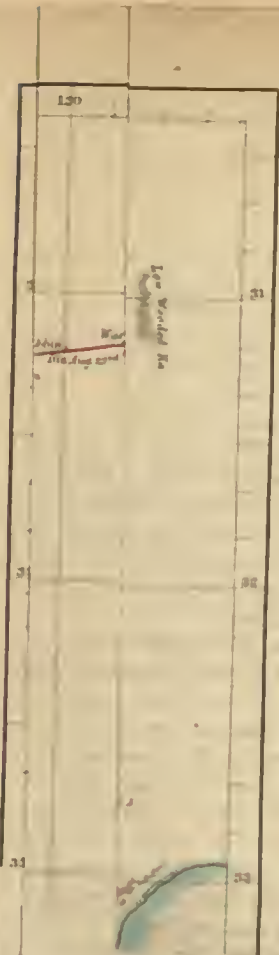
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5. Poor in natural productions, and not possessing a single fort, Saghalin could not serve us as a base for offensive operations against a foreign enemy, not only in the event of preparing a descent, but as a starting-point for our cruisers. Even in the interior of the island, in case of the appearance there of an enemy, under the present circumstances it would be impossible for us to think of offensive warfare, on account of (1) the want of roads; (2) the extreme dispersion of our forces, and (3) on account of their incomplete tactical education.

From this it is plain that the possession of Saghalin does not offer us supreme economic advantages, or present strategic importance. But as, on the one hand, rich beds of coal are found on the island, especially on the western side, and on the other, the same side borders the Channel of Tartary, the possession of which is of great importance to us, it would appear that we ought now to use every effort in order to escape quickly from the false position created by the treaties of 1855 and 1867 regarding the joint possession of Saghalin; and if it is impossible for Russia to acquire exclusive possession, then to attempt, at any cost, the division of the island along the central mountain-range from Cape Elizabeth to Tomari, so that the western half, the whole of the Channel of Tartary, and the spot which commands the Straits of Lapeyrouse, should remain to us.

XIV.—*Account of an Expedition to explore South-Western Australia, eastward of the settled districts, and beyond Hampton Plains.* By ALEXANDER FORREST, Esq.

MR. FORREST left Perth on August 5th, 1871, accompanied by several friends as far as York, from which place he started on the 11th on his way to the interior, taking with him six men, seventeen horses, and provisions for three months. Travelling in an easterly direction, on the 21st they arrived at Duladgin,



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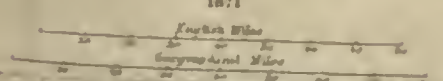
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Map Showing the
EXPLORATIONS
to the
Eastward & Southward
of
HAMPTON PLAINS
WESTERN AUSTRALIA
by
Alexander Forrest, Assistant Surveyor
1871





in latitude $31^{\circ} 10' 27''$ s.; longitude $119^{\circ} 23'$ e. This being the place where Mr. Hunt left provisions in 1866, they had hoped to have replenished their stores, but were much disappointed when, after a long search, they failed to find any traces of them.

Steering due east, over sand plains and scrubby country, on the 23rd they camped at Wurgangering, where an emu was shot by one of the party. Continuing their journey easterly, through a fair feeding district, but entirely destitute of water, on the 26th they reached a small flat, called by the natives Caralyaine; here they found good feed, but very little water. In the evening, meeting with some natives, they took two of them to camp, giving them small presents, the natives promising to show them water to the eastward.

On the morning of the 28th, Mr. Forrest, accompanied by Mr. R. Burges, Tommy Windich and the two natives, started to explore the country to the E.N.E., travelling for 34 miles without finding water, though assured by the natives that plenty would be found that day. They saw a great many kangaroos. Making an early start on the following morning, and proceeding north-easterly for 13 miles, they came to a fine water-hole, containing about 150 gallons. From here they made their way in an E.N.E. direction, over a poor barren country, covered with dense thickets, spinifex and scrub and numerous salt-pans; useless either as an agricultural or pastoral country.

On the 30th, after travelling 54 miles, and finding no water, Mr. Forrest decided on returning, the two natives having deserted the previous night. The following day they reached their bivouac of the 28th, the horses being in a most distressed condition, having been 60 hours without water, and themselves on very short allowance. The main party had been compelled to remove to Slate Well, 28 miles farther west, the water at the former camp being exhausted.

September 4th to 19th was occupied by Mr. Forrest in exploring the country to the east, north-east and south-east. On the 15th he reached his most easterly point, in longitude $123^{\circ} 37'$ e., latitude 31° s.; the country traversed consisting generally of grassy patches, with but little water.

September 20th, the whole party started for a native spring, about 70 miles to the east, in latitude $31^{\circ} 5'$ s., where a camp was formed.

On the 27th, Mr. Forrest commenced his journey southwards to the coast near Israelite Bay; intending to return to Perth by way of Esperance Bay. This portion of the route proved most distressing both to men and horses, the latter being 56 hours without water; one part of the track lay through a splendid range of grassy land, estimated at about 20,000 or 30,000 acres,

but although no water was found, Mr. Forrest felt every confidence in its existence.

On the 13th October, after a fatiguing journey of 17 days, they reached the coast at Thomas River; the bivouac of Mr. J. Forrest in 1870, when on his way from Perth to Eucla and Adelaide. From here they commenced their homeward route westward along the coast as far as longitude 120° E., and reached York on November 18th, after an absence of 100 days.

Mr. Forrest speaks in the highest terms of the members of the expedition; some portions of the journey being performed under most trying circumstances, the party on one occasion having spent two whole days and nights without closing their eyes, and walking a great part of the way.

XV.—Notes on the Physical Geography of the Bhawalpore State.

By J. W. BARNES, F.R.G.S., Superintendent of Irrigation.
January 15th, 1872.

In the year 1869, the Supreme Government of India called on Major Minchin, the Political Agent and Superintendent, for information regarding the desert of this State, which led me to despatch a party of surveyors, who were employed for some months under my orders, taking a series of levels, which, when completed, were submitted to Government with the Report and maps, copies of which I now forward—the main object of this survey having been to search out this comparatively “terra incognita,” to ascertain its capabilities for agricultural purposes, and also the practicability of irrigating the same from the Sutledgo River.

When the Report in question was prepared, my acquaintance with this part of India was very limited, but having now spent three years in Bhawalpore, and my official duties having given me opportunities of greatly extending my knowledge of this part of the country, (with the Political Agent's permission) I have much pleasure in placing at the disposal of the Royal Geographical Society some addition to my Desert Report.

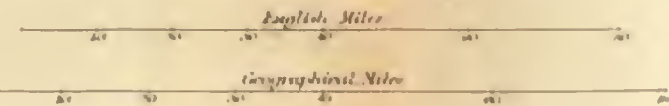
A further study of this part of the Punjab has in nowise altered, but rather confirmed, my opinion that at some period the Bangur* land within this State had a settled agricultural population.

* “Bangur” is an Indian term, applied to alluvial formations whose surface is now considerably higher in level than the valleys of the rivers adjoining it, and was formed probably under circumstances somewhat analogous to the American Prairies.

Map of the BHAWULPORE STATE

(PUNJAB)

to accompany the Paper by J. W. Barnes, Esq. F.R.S.



- Reference
- AAA Line of various irrigating channels called Trawans
 - BBB Approximate continuation of the Trawans to a point near Bhawal
 - CCC Line which may possibly be found outside for Bhawalpore from the Valley
 - DDD Canal in River Rindwa
 - Railways under construction



The fact of the River Sutledge flowing within a defined valley of its own, bounded on either side by high lands, many feet above its level, as shown by the section taken, precludes, in my opinion, the idea of this "Bangur" land having been watered therefrom.

There is moreover no room for supposing that the rainfall has ever greatly exceeded the average of the present day (which is about six inches per annum), a quantity altogether inadequate, in this thirsty land, for the growth of crops, except on a very limited scale; therefore, as there are only a few traces of wells for purposes of irrigation (if we accept it as a fact that this tract of country ever was cultivated to any large extent), there would appear to be ample room for believing that the waters of the "Ghuggur" River extended much lower, on their passage to the sea, than is at present the case, and that they were utilized for its irrigation.

Every part of this central tract called "Bangur" bears proof on its surface, that at some former period there must have been large areas of it flooded with fresh water for a long succession of years: not in the fitful manner of the Punjab rivers, where land becomes flooded from some sudden rise (in this case water rapidly drains off, on the river subsiding), but in that steady quiet manner, as is the case where there is rice-cultivation on a large scale; water used in irrigating this crop, owing to its slackened velocity, leaves a deposit of fine clay, free from silt, and gradually forms a surface as level as a billiard-table.

It is under conditions similar to the above, that the class of Testaceous Molluscs, so common to our tropical fresh-water lakes, is generated, and the presence of these shells on the "Bangur" lands seems to offer an indisputable proof of the argument adduced.

There are so many important and peculiar features connected with the present and past state of the "Ghuggur" River, that I trust, in my desire to give the opinion I have ventured to offer on this interesting subject greater weight, I may be pardoned for lengthening this paper by quoting extracts from authorities on the matter.

I find, in Thornton's Gazetteer, the "Ghuggur" is referred to "as flowing" through a level shallow valley, "about 20" miles wide, beyond the point where it enters "Sirhind;" it is afterwards joined by the "Markunda"* and "Sursoota," flowing down the same valley, which in time of inundation is deluged with water, forming a close net-work of streams, and sometimes causing the three rivers to coalesce in one great stream.

* Query, is not this the "Mirzakoonda"—a natural channel with an artificial head?

From the same authority I learn, that, having received the "Sursoota" and some streams of less importance, it passes into the British District of "Hurreeanah," and subsequently into that of "Blutteeana;" it then crosses the Bikaner frontier, and at a point about 22 miles south-east of "Blutneer" is joined by its last feeder, the "Chittung," the bed of which receives the water of the "Hansi" branch of the "Jumna" Canal. The whole of the streams united, are said to have reached the Sutledge at a point 20 miles north-east of Bhawulpore; the country, though now quite barren and depopulated, abounds in ruins, the evidence of former prosperity.

Again, under the article "Sirhind," Thornton says, "the country between the "Jumna" and "Sutledge" is traversed by about a dozen considerable torrents, which generally communicate with each other during the season of inundation; that from near "Thanesur" to "Kouaheree," the whole tract of country (with the exception of village sites) is liable to inundation. The inhabitants avail themselves largely of the inundation for rice cultivation, but the spring crops are irrigated by wells. The slope and evenness of the country are calculated to favour even the rudest attempts to divert the streams from their original beds; the same circumstances would also render it easy, were it desirable, to confine them again to one or two principal channels.

Thornton also mentions, that, in the reign of Feroz Tagluk, "Tartar" king of Delhi, who ascended the throne in 1351, a portion of the water of the "Jumna" River was diverted into several of the torrents before referred to; and, after passing Hansi and Hissar, a natural channel conveyed the redundant waters westward until lost in the lands of Bikaner, or probably in cases of very great floods discharged into the Ghuggur and ultimately into the Sutledge.

Turning to more recent information on the subject, Colonel Croften, R.E., in his Report on the Sutledge Canal project, says, "between the Chituny and the Sutledge, numerous drainage channels intersect the country, some of which from their size have been rivers carrying large volumes of water in bygone ages, though now dry, except during periods of heavy rains. How and when the supply of water was discontinued, have long been and are still disputed questions; whatever the cause of the desiccation may have been, there is now a perennial stream in very few of these channels.

This desiccation opens out a very important field for inquiry as to what physical changes have taken place to have brought it about; the question is moreover full of interest in the present day, when the irrigation of tracts of land, so called desert from want of sufficient rainfall, engrosses so much attention.

Looking at the map, it will be observed that the "Ghuggur" and its tributaries are the natural drainage channels for the area, comprised east of a line drawn north and south through "Ferozepore," and bounded on one side by the Sutledge and the sub-Himalayas, and on the other by the River "Jumna."

These channels all converge at a point in lat. $29^{\circ} 14'$ N. and long. $73^{\circ} 08'$ E., and thenceforward a well-defined channel exists all the way to the sea; it being known as far as "Sinde" by the name of Hukra or "Wahind" (the literal meaning of the latter being the bed of a stream). In its course through Sinde it is known as the Eastern "Narra," and is the same channel into which Col. Fife, R.E., has thrown a feeder at "Arore," which irrigates that portion of the continuation of the Desert beyond Bhawalpore on the eastern border of Sinde.

As regards the portion of the so-called Desert, within the British territory eastward of Bikaner and Bhawalpore boundaries, the Punjab Government have arranged to irrigate it by a series of canals, drawn from the Sutledge at Roopur.

When these works shall have been completed, there will be an intervening portion of about 400 miles in length, only awaiting the time when a supply of water, suited to its area, shall be thrown into its deserted channels, to restore it to prosperity.

The Sutledge River, when in flood, carries a volume of water far in excess of 100,000 cubic feet per second, a large portion of which at present runs waste to the sea: the dry bed of the "Hukra" or "Wahind," on the other hand, is capable of taking about half of it;—what is more natural than that a junction should be made between the two? *

The most economical and suitable line for such a junction would probably be that from Ferozepore to "Abohar" on one of the tributaries of the Hukra in lat. $30^{\circ} 12'$ N. and long. $74^{\circ} 34'$ E., and is marked on the map by a dotted line, C C.

Other lines might, of course, suggest themselves, and the best be selected after suitable inquiry. I mention Ferozepore as one point, because a masonry dam across the River "Sutledge" at that point, is in contemplation by the Punjab Government, and it does not appear likely to interfere with the irrigation scheme, having its source at "Roopur," as before referred to.

The most natural would appear to be to follow the line of the "Mirza Koondees" Canal near Roopur; but I believe the depth of cutting is there very great, and it might interfere with Col. Crofton's Sutledge Canal Scheme.

* The discharge of the Sutledge at the period of its highest flood, in season 1871, was 208,000 cubic feet per second, as ascertained by Mr. Collett, Superintending Engineer of Indus Valley State Railway.

The "Jumna" River carries during flood about three or four times more water than the Sutledge, most of which also runs waste to the sea. We have proof that, at some former period, the water of the Jumna was led into this desert tract, and, therefore, what has been before accomplished on a small scale, could as surely be effected on a much larger one; but the distance appears to be a drawback to this scheme—it would, however, be something to resort to if anything interfered with the Sutledge scheme.

I believe, without doubt, that there would be no difficulty in carrying out either of these schemes. Like all large works, it is simply a question of cost and labour; but it would create so much wealth as to leave but little fear of its not returning ample compensation for the outlay incurred, if carried out on a scale sufficiently large, and commensurate with the interests involved.

It results from a tabulation of the surface level of the Sutledge, daily for one year, that for six months in the year, viz., from the middle of October to the middle of April, the flow of the river is very uniform; and this flow, which is assumed at 5000 or 6000 cubic feet per second, will be mostly absorbed by the large and important irrigational works in progress and projected by the Punjab Government.

Between April and October, the melting of the snow on the Himalaya Mountains, and subsequently the heavy monsoon rain and the drainage therefrom, help to swell this river. It is the flood portion of this supply, at present not utilized, which would be available to be drawn off, if the scheme I have referred to is ever taken in hand.

Long ranges of sand-hills within the Desert tract offer great facilities for the storage of surplus water, for use during the season when the river is low, which, of course, would add materially to the value of the project.

Turning from the Desert or "Bangur" towards the river border of the State, we find the alluvial tract intervening (which in Indian phraseology is called "Khadur" * and which is the actual valley of the rivers flowing through it), more or less intersected by cauls, according as the irrigation in any one part of the State has been more or less developed.

From the sketch map of the Bhawalpore State, accompanying this Memorandum, it will be learnt that it possesses a river border of nearly 300 miles, of which 180 are on the

* Khadur is an Indian term applied to the land within the limits of the actual valley of a river, and, being formed by deposit from the overflow, marks the height of the highest flood to which the river has ever been subject. It is considerably lower in level than the "Bangur" land, which bounds it on either side.

Sutledge River, 40 miles on the Chenab, and about 70 on the Indus.

The rainfall does not exceed six inches per annum; but so uncertain is it, and so parched is the ground on which it falls, that, but for irrigation, the whole State (with the exception of well-cultivation and the land submerged by the rivers during floods) would be reduced to a desert, and therefore it is only in a country of this kind that the blessings of irrigation can be properly understood and appreciated.

On the three rivers, collectively, there are 45 canals of various sizes led off for irrigation, not including any below 10 feet bottom breadth. Amongst the largest we have one on the Sutledge, 106 miles long (referred to hereafter), and on the Chenab River there are two canals, each 45 miles in length, 80-feet broad, and 11 feet deep during floods; the other canals vary from 60 feet in breadth to 25 feet, and are from 40 to 20 miles in length. The aggregate length of the main channels is about 860 miles,—the branches from these aggregate nearly 500 miles,—and there are about 2000 cultivators' ducts (for leading water on to the different estates), which aggregate nearly 3000 miles in length.

Many of these canals were in existence long before the State came under British management, but were much neglected under native rule; and it was left to Major Minchin to improve this great branch of the administration, which gives plenty to the people and wealth to the State, and to exemplify how rapidly the latent resources of a neglected district can become developed under a judicious and economical administration. There is the broad fact that, within the space of five years, the revenue of this State has increased from 100,000*l.* to 200,000*l.* per annum,* and Major Minchin contemplates realizing a maximum of 300,000*l.* per annum, by the time H.H. the young Nawab is of age, nine years hence. The population is estimated at 473,000, which shows a taxation of nearly 8*s.* 6*d.* per head.

Altogether these canals combined draw off from the rivers a quantity of water which I estimate roughly at 20,000 cubic feet per second during the height of floods, and a mean discharge, during the five months the canals are flowing, of nearly half that quantity. This large volume of water is nearly all used up in irrigation; not a drop returns to either of the three rivers, and it is drawn from them in the following proportions:—From the Sutledge, 10,119 feet per second; from the Chenab, 6477; and from the Indus, 3405.

* Of this sum from 40,000*l.* to 50,000*l.* is spent yearly in irrigation improvements alone, and 15,000*l.* to 20,000*l.* on ordinary public works, and, after paying the above and the expenses of administration, a good surplus is funded.

The above quantities are approximative only; we have not yet completed arrangements for accurately gauging the discharge of each canal, but when we consider that the estimated mean discharge of the season, viz. 10,000 cubic feet per second, equals 13 times the ordinary summer flow of the Thames at Staines, it will suffice to give an idea of the scale on which irrigation is carried on here, and the wealth thus created, seeing that each cubic foot per second irrigates from 20 to 50 acres, according to the economy exercised in its distribution.

The irrigation in that portion of the State east of Khyrporo* city seems to have been neglected for many years, until resuscitated by Major Minchin, although we find traces of a very extensive system of irrigation in bygone ages, which must have been in disuse for a very long period, as even tradition here gives no clue to the period either when these channels were dug or even in use.

The winding channels there shown, as compared with many works of the present day, are on a very large scale; and when it is understood that some of these ancient channels, after centuries of silting and disuse, are still from 100 to 200 feet broad, and 10 or 12 feet deep in places, it serves as a convincing proof that the ancients must have brought great resources to bear on the execution of their public works, and takes us back to an age possibly coeval with that in which similar works in Mesopotamia were projected, and which are so ably described in the Society's 'Proceedings' for 1867.

The main channel, in my opinion, had its source in the hill streams near Roopur; at any rate, the Punjab maps show traces of it here and there, even east of Loodannah.

As a commencement of the resuscitation of the prosperity of the eastern district of the State, Major Minchin has already dug one entirely new canal (called the Fordwah), 106 miles in length, 60 feet broad, and 12 feet deep, which draws 2000 cubic feet per second from the Sutledge when in flood: the whole of this water is utilised in irrigating some 32,500 acres of land, and so great is the demand for water that we are constantly besieged by the cultivators to give them more.

Under the auspices of Captain Gray, officiating Political Agent, important irrigation works are this year in progress to meet their wants; and, in addition to two branch canals from the Fordwah, and numerous cultivators' duets, we are trying to turn the long disused circuitous old channel, referred to previously, to some account.

Some few miles from the Fordwah head, a new city has been

built within the last three years, and in compliment to its founder, Major Minchin, it is called "Miichinabad." * Latitude $30^{\circ} 11' N.$; longitude $73^{\circ} 37' E.$

Strange as it may seem, that with three rivers such as the Sutledge, Chenab, and Indus, which at all times have a supply of water for navigation by boats of light draught, none of these canals should be perennial, yet such really is the case. As it is difficult to realise the fact, by contrast with any of our European canals, a few words in explanation of this apparent anomaly may not be out of place:—

On the first glance at the cross sections of the country which I have drawn, nothing would appear simpler or easier than to construct canals which should run for ever; but, on the Punjab rivers, nearly all our canals have their sources in the alluvial soil, below the point where the river has neither rock nor boulders to protect its banks and bed, and the water flowing in them is so laden with silt, that a large portion thereof is lodged within the bed of every canal for the first few miles from the point where it leaves the river; and when the annual floods subside in October, it is generally found that the head of the canal is so choked up as to have ceased flowing.

From the experiments made by General Tremienheere, c.a., as recorded in the Society's 'Proceedings'† for 1857, the Indus water appears to contain an average of 25 parts in 10,000 by weight of silt, and from those data it follows that as silt weighs somewhere about 160 lb. per cubic foot, a mean volume of 10,000 cubic feet per second will carry with it during the five months that the canals are flowing a quantity represented by a mound of earth 1 square mile in area and 4 feet 6 inches in depth.

The silt thus borne along by the water contains about one-half clay, and one-half very fine sand and mica; and as it is this latter which is chiefly deposited in our canals, it follows that in the irrigational channels of this State, this half amounts to a total of 2,343,600 cubic yards, which has to be annually cleared out therefrom by manual labour to prevent the canals being entirely choked up; thus it will easily be seen how neglect for two or three years would very soon render them useless.

A steani dredge is expected very soon to arrive from England, fitted in such a manner as to raise the silt sufficiently high to deposit it on the spoil-banks of a canal, the lift from bed to top of spoil-bank being from 15 to 20 feet.

As compared with the large quantity of silt we have to deal with, the services of one dredge for this purpose will scarcely be felt; and it is problematical whether in dry excavation the cost of raising silt by machinery can compete with manual labour at rates varying from 8d. to 1s. per day; but in cases often occurring, where the river forms a bar between the main stream and the head of a canal, where the material to be removed is a quicksand, and manual labour can with difficulty be applied, it will be invaluable.

In this state all canals are looked on as a sort of co-partnership between the State and landowners, who are here called Zemindars, the State giving large sums in aid of all new works of any importance. The canals are kept in order at the cost of the landowners, under arrangements between them and the cultivators; but in exceptional cases, when there is an unusual deposit of silt, the State gives grants in aid towards the cost of clearance.

To effect this clearance of silt, about 10,000 men are generally employed

* The termination "Abad" is a Persian word, meaning "flourishing"—"prosperous."

† Vol. xi. p. 22.

for a space of three months after the summer crops are harvested; and hence, from the falling of the river in October until the completion of the clearance, which is generally finished by the end of March or April, no water is admitted into any of the canals on that account.

Whilst, as I have explained, one half of the water-borne silt has to be cleared out of the beds of the canals, the other half, which is carried in by the water, in suspension, is eventually deposited on the land irrigated; thus, whilst yearly increasing the depth of soil, it is likewise fertilising the land, inasmuch as it contains a great deal of organic matter.

Enormous as is the quantity of silt carried inland by the canals, it is but infinitesimal as compared with what is deposited by the rivers themselves when flowing over or submerging low lands on their banks. Instances are not rare where, in the space of three years, vast changes take place in the course of a river, resulting, perhaps, in its eating away one bank for a length of 5 miles, and a breadth of 2 or 3 miles, sweeping away villages, wells, gardens, and trees, in its headlong course, and in the part where the river before flowed to a depth of 15 or 20 feet, silting it up entirely, consequently forming new land.

This shows how uncertain all irrigation arrangements must be on rivers which are subject to such vicissitudes, and how serious it becomes when, in making some sudden change, it throws up a sand-bank of a mile in breadth, and sometimes many in length, between the flowing stream and head of a canal, leaving the bed of the latter dry: this actually occurred last year with one of our large canals, and occasioned a failure of about half the area of crops cultivated on it, which perished from want of the final watering.

The bed of the Sutledge, for a depth of 80 feet, has been proved to consist of very finely comminuted micaceous sand, almost entirely free from earthy particles, and its banks, below low-water level, are mostly composed of the same yielding material. A current with a velocity of only 2 feet per second, acts freely on it; and as the velocity of the Sutledge, wherever its current sets, is as high as from 6 to 8 feet per second, we have thus an explanation of the causes operating in the devastation of its banks, and also a satisfactory reason why its waters are so largely charged with silt. So incessantly is erosion going on, that within the limits of its valley every part seems to have undergone the process of having, at some time or other, been eaten away by the river, and re-formed again; hence it is a rare thing to see either any very old building or a tree of great age on its banks.

As far as I can judge, the sand-hills referred to in my first report as forming the boundary between the Khadur and Bangur lands, seem to mark the limit beyond which its erosion on the south side has never extended, and I believe at the present day its meanderings are confined within a breadth of 10 miles.

The Sutledge seldom exceeds 20 feet in its deepest part, and

during its highest flood does not rise more than 10 feet above the lowest surface level.

The rise of the Chenab River is generally 2 feet more than the Sutledge, and that of the Indus about $1\frac{1}{2}$ foot more than the Chenab. The depth of these two rivers during flood is often from 30 to 40 feet in places.

As the canals flow only for five or at most six months in the year, during the hot season, when the rivers are in flood, the crops grown during that season are the only ones which have the benefit of direct canal irrigation: on the other hand, a very large area of wheat and pulses is cultivated in the winter on land which has had a heavy flooding by canal water or river overflow; the crops being matured in the spring by irrigation from wells, wherever the depth of spring-water level below the ground surface is so low as to afford no nourishment to the roots by capillary attraction.

As remarked in my first Report, the spring water on the Sutledge lands is from 20 to 30 feet below the surface, and here, wherever wheat crops are grown (except on lands submerged by the river's overflow) they generally get three to six waterings during the season from well-water, according as the land may have had a flooding from canal-water or not. On the Chenab and the Indus lands the spring-water level is generally much nearer the surface, and, moreover, as the flooded soil is more retentive of moisture, watering wheat-crops from the wells is not so universal—indeed, it is the exception rather than the rule.

In percolating through the sand, the well-water evidently takes up a very appreciable quantity of sulphate of soda, and is likewise in places impregnated with sulphuretted hydrogen.

The daily use of water containing these ingredients is supposed to induce a tendency to scurvy, which, amongst the natives, is counteracted in some degree by their partaking largely of sour buttermilk. The Nawab's household, as a rule, send to the river for their drinking-water, and, when possible, the European families adopt this course: the Civil Surgeon has impressed on us the advantage of having the well-water boiled before drinking it or using it for culinary purposes.

In General Tremenheere's paper on the lower portion of the Indus,* reference is made to the inundations which every now and then occur. In contrast with some other parts of the world, where severe inundations bring in their train destruction of life and property, and are considered a calamity, here, on the other hand, as regards the inundations to which portions of this State

* Royal Geographical Society's 'Journal,' vol. xxxvii. p. 69.

are liable from overflow of the rivers bordering it, it is looked on as a blessing; and although, occasionally, portions of the summer crops sown within its reach get destroyed, for one acre of such there are perhaps fifty acres of otherwise waste land submerged, and therefore susceptible of cultivation.

After the floods have subsided, the land is at once ploughed up, and the surface being well pulverized, in order to prevent as far as possible the escape of moisture by evaporation, it remains fallow until November.

Wheat, barley, and the other cereals, and oil seeds of temperate climates, are then drilled in, and (excepting those well-lands whose surface is generally too high in level to acquire a thorough saturation during the flood) crops are produced without any subsequent watering, depending for their sustenance during growth on the moisture which the soil has imbibed during the floods, and the dews that are precipitated by its gradual evaporation and subsequent condensation during the cold nights. There are low portions along the banks of the rivers, which, during every flood, get regularly submerged, and, where cultivated, bear crops of pulses and wheat. But the inundations referred to by General Tremenhare are of far greater importance than the above, and are, moreover, exceptional, inasmuch as two simultaneous conditions are necessary to bring them about: 1st, continuous heavy rains in the watersheds of the three rivers at one and the same time; and 2ndly, the set of the river on the left bank; this latter alone on the Indus and Chenab making sometimes a difference of 2 feet in the height to which the water rises under conditions in other respects similar.

A reference to the sections taken across the State, from Bahadur on the Indus to Kundairah on the Hukra, will show how certain, and at the same time how natural, it is for this crest of the inundation (if not checked) to flow down over the gentle slope of the country in from its banks, whenever the floods rise sufficiently above their ordinary level to overflow the bank. The land submerged by this overflow is generally of the richest description, inasmuch as every successive flooding leaves a rich deposit of fertilising silt, and as the floods are not annual, the fallowing of the land between the intervals of a flood's advent, adds to the fertility of the soil. In thus escaping over the high bank during a succession of years, each river forms a glacis for itself, and in course of time even its bed becomes higher in level than the surface of the ground some miles inland, and it is this peculiarity which gives such facilities for taking off irrigation canals. Not only is this a normal condition with each river, but every channel of any description (where its waters are not prevented from overflowing its banks)

forms a glucis for itself, and, as a rule, the highest ground is always to be found on the banks of a channel whether it be in use or deserted. This reverses, of course, the natural arrangement which we observe in the valleys of most of our rivers at home, where all surplus water in the valleys finds its way into the river, instead of, as here, the river water escaping into the valleys, never again to return.

It is the silt with which the water is so heavily charged that causes this. The moment the overflowing water escapes from the river, the decrease in the velocity of the running water causes an immediate deposit, first of the heavier portions, and so on until after proceeding a short distance none but the finest particles are held in suspension.

I have noted in the cross sections the surface level of spring-water in various places, and from the observations recorded it will be seen that the greater the distance any well may be from the river, so is the surface level of its water lowered, proving, of course, that as there is no surface drainage percolating into the soil, there must always be a subterranean drain inland from the river along its whole course. From this we may assume, what I believe must really be the case, that the further rivers of this class run, so much must their waters become diminished beyond the point where they possess no feeders. As a rule, I think we may accept this with regard to all the Punjab rivers except the Indus; though it is only, I believe, during rains that that river receives any addition to its volume by drainage from the "Suliman" and subsidiary ranges.

Reverting to the subject of the periodical overflows, I have just been put in possession of a report of the action of the same in the lower portion of the Bhawalpore State during the past season, which was one of exceptionally heavy rains in the watersheds of the rivers draining the Himalayas.

Three large overflows occurred: one above the junction of the Sutledge and Chenab near Ooch; one near the junction of Chenab with the Indus; and a third on the Indus just above Subzulkote. I have sketched their courses on the tracing now forwarded.

These overflows commenced at the beginning of August, and lasted throughout the month. The one east of Ooch is described as having been in places some miles in breadth and ranged from 1 to 4 or 5 feet deep. It extended s.s.w. to Khanpore, a distance of nearly 50 miles.

The next overflow which took place was in the neighbourhood of and above the junction of Chenab and Indus, and extended for a distance of 18 miles; it spread over the country for a breadth of from 2 to 10 miles. On its western side the flow was checked by the embankment of the "Kubeera" Canal, but as was

the ease with the overflow from Ooch, the water was kept sufficiently under control to guard against damage to existing cultivation, and likewise flooded many miles of country for winter crops.

The third overflow, which was from the Indus near the southwestern boundary of the State, was of far greater extent than the two just described, and appears to have overflowed the river bank over a distance of 15 miles. It left the river above Subzulkote, and after crossing a canal called the Subzulwah, passed into the Sind district. How far this extended I have no account of. As regards the other two, it will be seen that, great as was the volume, all was absorbed within the State.

I am not prepared with data to show the quantity of water thus introduced into the country, which, it must be observed, was in addition to the canal supply, which latter a very high and exceptional inundation raised much above the average. I should suppose, however, that the volume of these combined floods could not have been less than 30,000 cubic feet per second at highest level of overflow.

When an inundation of this kind does happen, flowing as it does for miles over ground of which portions are under crops, we may well suppose how disastrous would be the result if left entirely uncontrolled, and at the same time what anxiety must prevail to get as much benefit out of such a godsend as possible, by diverting its flow over land which may perhaps have lain fallow ever since a similar flood of some years before. Accordingly, at such times, the whole agricultural community concerned, headed and aided by the presence of the Revenue and Irrigation Officers, assemble and unite in their efforts to control and guide the waters of the flood in their onward course; and so thoroughly is the thing understood by the people here, and, as regards the flood in question, so heartily did all co-operate in the one mutual object, that but a very small percentage of the standing crops were injured, whilst many thousand acres of most luxuriant wheat now gladden the eye on land which, but for the flood, would have remained uncultivated.

This short account of an occurrence by which a store of moisture is periodically bestowed on this thirsty land, and the almost incredible manner in which such enormous volumes of water, equalling some rivers, are absorbed and utilized, will help more than aught else to demonstrate how vast and, as one may say, unlimited are the requirements of countries situated, as is this State, in a comparatively rainless region. We could not have a clearer proof of the wisdom and beneficence of Providence than in having placed on the border of this rainless and arid land three such rivers as the Sutledge, Chenab, and

Indus, which are fed so bountifully from the stores of wealth laid up during the cold weather on the far-off Himalaya Mountains, and, by the melting of the snow supplemented by the subsequent monsoon rains, having brought it within reach of the same at the very time it is so much needed.

NOTES ON THE CLIMATE, AGRICULTURE, &C., OF THE BHAWUL-
PORE STATE.

The Bhawulpore State, though it has an extra-tropical climate, has, owing to the rarity of its atmosphere (caused by deficiency of rain), a very high summer temperature, and there are, I should suppose, few countries of its latitude which have such a continuance of hot weather. The severest part of this season is from the end of April until the middle or end of June, during which months the mean temperature in the shade is 103° ; not only is the heat of the sun very great, but the air is dry, and the wind is almost fiery, and, during these months, the growth of vegetation is scarcely perceptible. But with the bursting of the south-west monsoon comes a change: gradually the intense heat of the two previous months is softened down by clouds, the mean temperature falls to about 95° in the shade, and there is a perceptible degree of moisture in the air. The scorched grass and trees respond to the change by putting forth young shoots, and with only an inch of rainfall the whole country looks for a time quite green and fresh.

This latter season is a busy time for the agriculturist. The same cause which has supplied moisture to the atmosphere, has also filled the rivers (and therefore the canals) with water, and, at this time of the year, cotton, rice, indigo, and all the various grains, &c., which are common to all tropical countries, are then put into the ground, and come to maturity in the autumn.

Indigo is grown here on a considerable scale, but soil and climate are particularly suited to it. This valuable plant, with a plentiful supply of water, sometimes attains the height of six or seven feet. The manufacture of the dye is carried on in a most primitive manner here: the whole cost of vats and implements for a field of 10 acres ranges from 5*l.* to 10*l.* sterling. In this dry climate the whole process is carried on in the open air, and, when ready for sale, it is in pieces of the size and shape of what is called in England "thumb-blue;" it acquires that peculiar shape from being taken up between the thumb, fore and middle fingers, when in a pasty state, to be laid out for drying. It contains more or less impurities (chiefly of clay), according to the care taken during the process of manufacture. It is nearly all purchased by the Cabul merchants at a price ranging

generally from 10*l*. to 12*l*. per cwt., and doubtless finds its way into the markets of Central Asia.

Great as is the change from the scorching heat of May and June to the more genial but still tropical heat of July, yet greater is the change which November ushers in; after which a dry wind from the snowy ranges reduces the mean temperature to 60° or 65° with frosty nights, reminding one once more of our English climate without its rain.

After harvesting the summer crops, the ploughman has no rest, for now commences the season for putting in all the cereals, &c., which form the staple of our cultivation at home. Wheat crops miles in extent, without a fence or division to break their continuity, almost excite one's wonder at the means whereby such large areas can have been put under crop in a country not over-populated, and possessing no implement better than the rudest native plough made by the cultivator himself (very often out of the very commonest materials) by a couple of days' labour, and worked by a pair of small-sized bullocks not much larger than many a yearling at home.

The seed is drilled in. The implement (drawn by a pair of bullocks) consists simply of one upright hollow bamboo with a wooden cup on its top, and fixed on what may be called the rear of the ploughshare; and thus, as the plough is guided by the ploughman's left hand and makes its furrow, the seed is dropped in the cup with the right hand, and so becomes simultaneously covered up.

The ordinary produce of wheat is from 11 to 24 bushels (of 55 lbs. each) per acre.

Though wheat is the staple winter crop, many other things grown in temperate climates thrive during the cold season; fields of turnips for feeding the farmer's cattle are found around every homestead, and in the absence of our nourishing crops of grass and hay, young wheat is universally cut and given, in its green state, to horses during this season.

These winter crops are generally matured by the end of April, and their harvesting, thrashing, and winnowing occupy the cultivators until the season arrives for preparing the ground for the summer tillage.

With the exception of potatoes, which (if not artificially protected) suffer from the frost, all our English vegetables come to great perfection here: indeed, I have seen cauliflowers and lettuce in our station gardens at Bhawalpore as fine as some of those grown at home.

Gardens well stocked with fruit-trees abound in the outskirts of the Bhawalpore city, and at every town where His Highness the late Nawab usually halted on his hunting and shooting

excursions a garden is to be found. Whilst the mango-tree (where attention has been paid to its culture) grows to a large size, and produces a fruit of unrivalled flavour, which comes to maturity in the hot weather, there is sufficiently cold weather to enable the apple-tree to produce a small, though eatable, fruit, which ripens about the middle of April.

There are likewise numerous groves of orange-trees and pomegranates; the former attains sometimes a height of 12 feet, and produces fruit at the usual Christmas season. The fruit of the superior kind of pomegranate-trees is very fine, and is sometimes as much as 1 lb. in weight.

Peaches of a peculiar flat shape, but very small, with a faint attempt at the bloom so attractive in our English fruit, grow in abundance, but they lack that delicacy of flavour which we are accustomed to associate with this fruit in England.

We have also the date-palm, which is the one great type so common to all countries in the northern hemisphere possessing an arid climate, with extreme summer heat and a low winter temperature. The tree is found in all parts of the State, and is especially abundant in the neighbourhood of all villages where the early Mahomedan conquerors settled. It has occurred to me as probable that, even if the date-palm existed here before their arrival, the cultivation of a tree of such importance in their own country would most likely have received especial attention from them. We find as well the following fruit-trees in the gardens:—Lime, lemon, citron, mulberry, fig, ber (*Zizyphus Jujuba*), jamoo (*Jambosa vulgaris*), and grape-vines.

In a country like Bhawulpore, where scarcely anything grows without irrigation, either from the river, canals, or wells, it will not be surprising that there are no forests, and that timber trees are scarce.

The following is a list of such trees as do grow here:—Babool or keekur, *Acacia Arabica*; neem, *Azadirachta Indica*; poplar or bahn, *Populus Euphratica*; false blackwood or sheeshum, sissou or talee, *Dalbergia Sheeshoo*; banian-tree, *Ficus Indica*; peepul, *Ficus religiosa*; biting peeloo, *Salvadora Persica*; leafless caper-bush or kirrier, *Capparis aphylla*; horseradish-tree, *Moringa pterygosperma*; mountain neem, *Melia Buckayen*; sweet peeloo, *Salvadora elcoides*; seriss, *Albizza Lebbeck*; amultas, *Cassia fistula*; tree tamarisk or okali, *Tamarix articulata*; pilehee, *Tamarix deoca*; lace, *Tamarix Gallica*; thorn-tree, jhund, or khundee, *Prosopis spicigera*.

Except for a month or so after rain, or where the ground is either irrigated or receives an overflow from the river, this State is badly off for natural grasses, and there are none cultivated: hence the breed of horses, cattle, sheep, and goats is poor. The

two latter, indeed, live for a large portion of the year on the leaves of shrubs and trees, the branches of which are systematically lopped off by the shepherds of the flocks.

But when rain does fall, more especially in the desert, the whole surface, in a few days, is covered with vegetation; and so nutritious is it, that the milk acquires a delicious aroma and richness beyond conception, and cattle and sheep at that time get quite fat after feeding thereon for a couple of months.

But of all animals the camel is most at home in this arid country, where, whether on the sand-dunes of the desert or in the valleys of the rivers, and whether rain falls or not, this beast seems to thrive: the *salsola* and tamarisk plants and shrubs, of which there is such a variety, form his staple food, whilst at the same time the tender shoots of the *acacia*, or, indeed, nearly all the known timber-trees here, afford that change of diet which is, I believe, one of the great secrets in the successful rearing of these animals.

The whole of the region included in this and the neighbouring States is simply one vast breeding-ground for these animals: their selling price varies from 6*l.* to 20*l.*, according as they may be low or well bred.

In conclusion, it may be interesting to those unacquainted with this part of India to learn something about some of the people amongst whom the writer of this Paper is labouring, and I cannot do better than give a few extracts from Major Minchin's Reports on this State to the Punjab Government for 1867-68-69:—

"The earliest authentic account shows the Dadpotras * as settled at Shikarpore, in Sindh, where they had dug canals from the Indus, and were in a very prosperous state. A dispute arising with the Governor of Sukkur about the payment of revenue, the Dadpotras marched in a body, two days' journey, into the desert. They were pursued by the Dooranee troops, and, being encumbered with their women and children, they adopted the desperate measure of killing them all, and then attacking the Dooranees. They routed them with great slaughter, but, being afraid to return to Shikarpore, they marched up the left bank of the Indus, and settled near Allahabad,† in this State. This was about 'the year' 1737. They divided what is now known as the Bhawalpore State amongst the chiefs of the tribes, and selected Bhawal Khan, of the Peerjani section, as the head chief, who then founded the city of Bhawalpore. A Pelocch of the Georgij tribe, who had accompanied him from Sindh, was appointed his minister. This Pelocch, during the rule of Bhawal Khan the Second, succeeded in gradually reducing the power of the other 'Dadpotra' chiefs, and made them accept their Jagers‡ under Sumnud from the Nawab, whose Government was recognized by Timoor Shah, Emperor of Delhi, in 1789. In 1827, Bhawal Khan the Third succeeded him, and consolidated the State: all the Dadpotra chiefs acknowledging him as Nawab, and receiving their titles to their Jagers from him, on the condition of feudal service.

* The family of H.H. the Nawab—literally "the sons of David."

† Lat. 28° 59' N., long. 70° 56' E.

‡ Jager is the name of a rent-free grant of land, and is generally for life only.

"On the death of Bhawul Khan, his second son, at his desire, was made Nawab, but was deposed by a conspiracy on the part of the Dadpotra chiefs, headed by Akil Mahomed Khan Achrani, within four months of his accession, and his elder brother, Futteli Khan, became Nawab. On his death, in 1859, his son, Bhawul Khan the Fourth, succeeded him.

"'Father of the present Nawab.' Bhawul Khan the Fourth died suddenly in June, 1866. His son, Sadik Khan, was acknowledged as his successor by the British Government, the Commissioners of Mooltan being deputed to invest him with the customary insignia.

"Soon after this date, the Queen-Mother and principal members of the State applied to have the State taken under British protection during the minority of the young Nawab.

"The Zemindars (cultivators) are a quiet, peaceable race, and very amenable to control; they are excellent agriculturists, and very hard working. The dread of civil war alone disorganized them, and a settled Government is to them the greatest blessing. This is clearly shown by the energy with which they have come forward to carry out canal improvements: they are daunted by no difficulties.

"The description in Tacitus of the ancient Britons is peculiarly applicable to these people:—They cheerfully bear the conscription (statute labour), the taxes and the burdens imposed on them, if there is no oppression."

In a former Report I mentioned having discovered an old tower in the desert, about 18 miles south of Bhawalpore, in which we found an old plate with an inscription written in the old Sanskrit character.

This plate has been partially deciphered by Mr. Bayley, B.C.S., showing that it was a dedication of the *vehar*, or Buddhist Monastery of *Dumane*, for the benefit, religious, of sundry barbarously-named relatives of the *Bhiskee*, i.e. *Bhikshee*, or religious mendicant, in the *Sumbut*, or area, of King *Kanishka*, in the month of *Daisiki*. Mr. Bayley considers it valuable as confirming General Cunningham's surmise as to the use of Macedonian names of months, or, at least, attempts at them—the *Daisiki* being the equivalent of *Dasmus*.

It also confirms Sir H. Elliot's opinion that the Buddhist religion was the prevalent one in *Sinde* when the Mahommedans first came in contact with Indian superstitions; and this would in some measure account for the retention of this name, "*Soohi vehar*," to the present time.

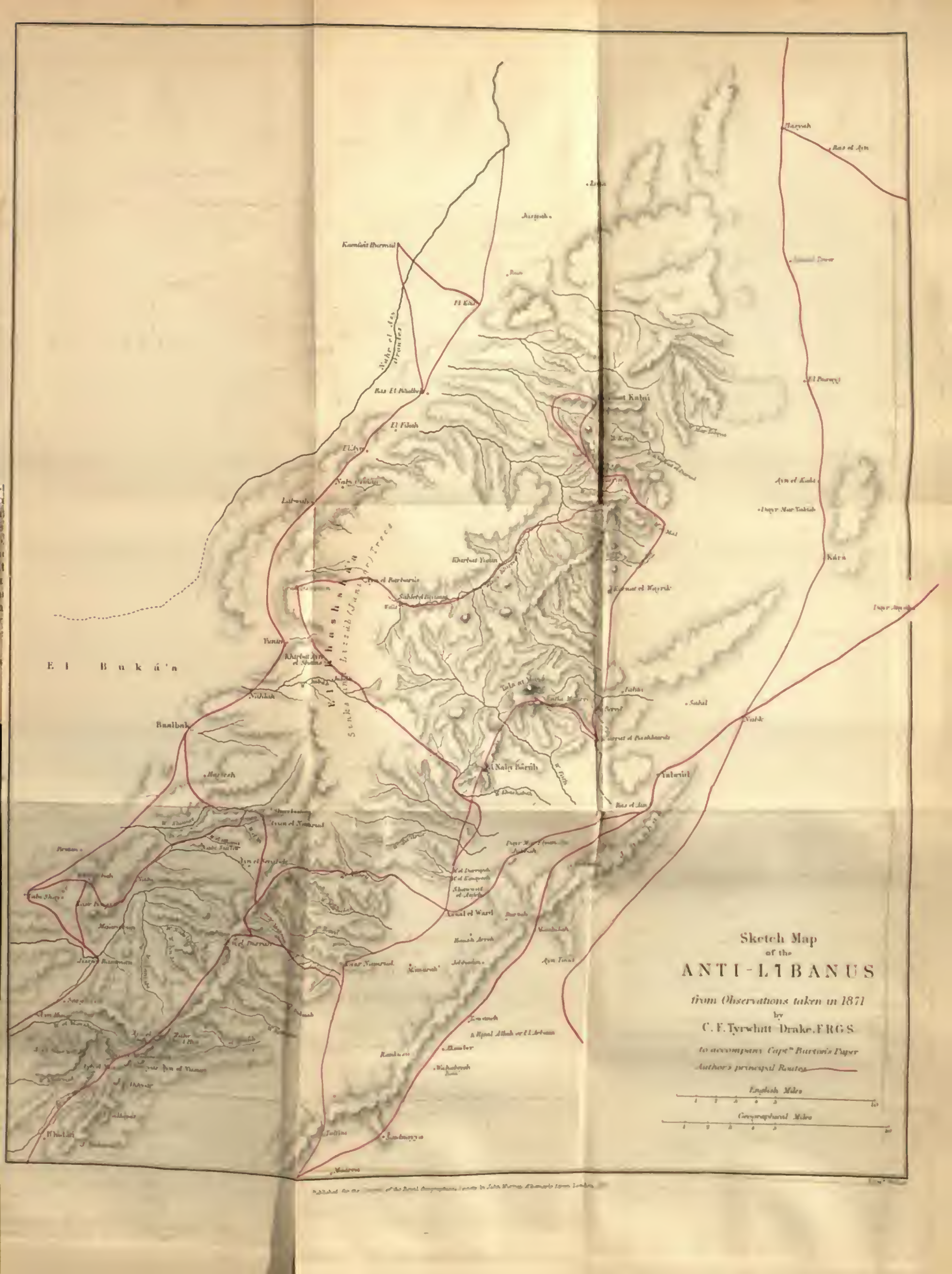
At page 406, volume i., note B, of Sir H. Elliot's '*History of India, as told by its own Historians*,' it is related that *Rai Sahasi XI.* remitted certain taxes on condition that the people should raise six forts for him—at "*Ooch*," "*Matela*," "*Scorai*," "*Mau*," "*Alor*," and "*Sewistan*." Two of these forts, viz. "*Ooch*" and "*Mau*," are in this State.*

* "*Ooch*" is at the confluence of the Sutledge and Chenab. "*Mau*" is situated in lat. 28° 35' 0" N., long. 70° 24' 0" E. *Matela* is, I believe, on left bank of the Indus, in *Sind*, some miles below *Subzulkote*. "*Alor*" is near *Roree*, opposite *Sukkur* on the Indus, in *Sind*. *Sewistan* is the present *Sediwan*, on right bank of Indus, in *Sind*.

At "Mau" there is a shrine which has been about 100 years in existence, and the tradition is that the old fort was then in the same state as it is now. The walls are very high and in wonderful preservation; and, if the conjecture is right that the passage in the Chachnama above-mentioned refers to these forts, they must be 1300 years old, as "Chach," who succeeded Sohas XI., ascended the throne of Sinde in Hijiri 10, corresponding to A.D. 594.

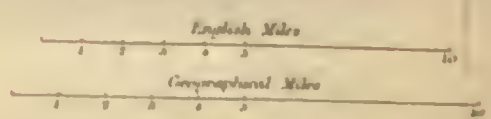
XVI.—*Notes of a Reconnaissance of the Anti-Libanus.* By RICHARD F. BURTON, F.R.G.S., and CHARLES F. TYRWHITT-Drake, F.R.G.S.

MANY readers, even professional geographers, will think that we are to pass over trodden ground, and that in describing the Anti-Libanus we can do nothing but fill up with details the broad outlines traced by predecessors. The contrary is positively the case. I expected great things from 'L'Anti-Liban, par Gérard de Rialle' ('Bulletin de la Société de Géographie,' tome xvi. 1868), and found that it treated of only the well-known lower altitudes well trodden by a host of travellers. Surprising as it may seem, it is still true that the best and most modern maps do not name a single valley north-east of Zebedání, nor a single summit, except the "Jebel el Halimeli," an utter misnomer. They show merely the long conventional caterpillar, flanked by the usual acidulated drops, and seamed with the normal cobweb of drainage: when they have disposed all this parallel with the Libanus, they have apparently done their duty. Thus they neglect to show, amongst other things, the important changes in the chain, whose northern half becomes exceptionally arid, whilst the southern is remarkably fertile. This is also true of the windward and seaward chain of Libanus, but to a lesser extent. The traveller in Syria and Palestine is also left in ignorance of the fact that the general aspect of the range is superior to that of the maritime Sierra, that the colouring of the rocks is richer, the forms are more picturesque—often, indeed, "weird, savage, grand, almost magnificent, like parts of Moab"—that the contrasts of shape and hue are sharper, and that the growth in places assumes the semblance of a thinned forest. Of the Anti-Libanus we may say, of the Libanus we may not, that "ravines of singular wildness and grandeur furrow the whole mountain-side, looking in many places like huge rents, whilst the views from the summits are far superior in extent of range and in variety of feature."



El Buká'n

Sketch Map
of the
ANTI-LIBANUS
from Observations taken in 1871
by
C. F. Tyrwhitt Drake, F.R.G.S.
to accompany Capt. Burton's Paper
Author's principal Routes



water-skins, and two mules, driven by as many men, were lightly loaded with all our belongings. The *point de départ* was B'lúdán, a little Christian village, Greek-Orthodox and Roman Catholic, which clings to the eastern flank of the Zebedání valley, bearing 285° from that important Moslem town. The valley is well known to travellers, because it leads from Damascus to Baalbak: in it we find the official sources of the Barada, or River of Damascus, and the pool from whose head it jumps lies at an angle of 239° from Mr. Consul-General Wood's summer-quarters. The geographical or true source must be sought some 5 miles to the north-east; it is called 'Ayn Haur ("Poplar Fountain"), from the little village of the same name, and it is fed in winter by the Sayl or torrent of Jebel el Shekíf. The water flows down a broken and clearly defined valley, divided into sections, every one, as usual, amongst these ungeneralising races, with its own distinctive term, *e.g.* Wady el Kabír, Wady 'Ayn Haur, and Wady Dillah: in summer, however, its precious supply is drawn off by the fields, hence it has not the honour of being popularly known as the Barada head. The mythological source is the Jural, or "swallow-hole," in the western block which separates the valley of Zebedání from the Cœlesyrian vale: this sink was until late years used as a Tarpeian rock—the offenders being of the sex formerly sacked at Damascus and Stambul.

B'lúdán lies about 1000 feet above the sole of the Wady Zebedání: its site is a bulging shunt of fertile red humus, secondary limestone, iron-clay, red-black sandstone-grit, and here and there a bit of basalt. The general slope of this Wady el Mu'allakah, or upland of B'lúdán, is 9° , and the rhumb 285° (mag.). Although neither striations nor burnish are now retained by the easily degraded rock, it has all the appearance of an old moraine, deposited by glaciers that once debouched from the upland upon the Zebedání valley, and which hollowed a passage from the Barada through the heart of the Anti-Libanus. Similar features occur in the Cedar Valley; in the red ground north and south of the Zahlah gap, which blushes so beautifully in the evening sun, and, without mentioning others, in the heaps at the gorge-mouths to the east and the north-east of Iskanderún or Alexandretta.

The upper section of the B'lúdán valley is a complicated bit of ground, bearing 41° from below, and wheeling suddenly to 60° . It is bounded eastward by a crest-line, which M. Gérard de Rialle, with the guide-books, calls the "highest summit of Anti-Lebanon," but which has no claim to that honour. Impassable during winter by reason of the snows, in fine weather this B'lúdán block commands a noble view, especially to the south and

south-east. Here the eye clearly defines the three great lateral gradients which form gigantic steps, each averaging 700 to 900 feet above its neighbour, and leading from the Padan Dam-mesek ("upland plain of Damascus") to the oriental base of the true Anti-Libanus. The highest is the Assál el Ward terrace; the middle gradient is that of Kárí-Nabk; and the lowest is the Saidnáya-Jayrúd, which runs almost without a bend to Palmyra.

The B'lúdán block is fronted on the west by the Jebel el Shekíf, or "Mountain of Clefts," a name sometimes erroneously applied to the higher elevations on the east. Three principal buttresses are seen towering like titanic steps in the clear blue air by those who take the French diligence from Bayrút to Damascus. No. 2 from the bottom bears the name of Dayr Naby Yúnán: the picturesque ruins upon the summit are connected by the people with the Prophet Jonah. We found two Greek inscriptions, both sadly mutilated; one of these was cut upon an altar much resembling that which we brought from Kanawát. No. 3, the Khashshá'a el Shekíf, "rough ground of the Shekíf," is well grown with the Lizzáb, a juniper which has almost disappeared from the lower altitudes. This is the home of the bear (*U. Syriacus*) which uses the night to destroy the vetches and grapes raised upon the fertile dark lands below. In the summer of 1870, I was shown the pelts of a full-grown male and a cub that had been killed; in 1871 a second peasant was mauled by a hungry bruin whose meal he had unwittingly interrupted. The result was that Náúra, or *gardes-champêtres*, armed with firelocks, passed the night amongst the crops, but, when shooting, they were careful not to wound. They divide bears into two kinds, the Ákish, or vegetarian, and the Lahbám, or meat-eater, who often takes a fancy for a lamb or a kid. They all agree that the bear hibernates during the Marbáníyyah, or forty days following the winter solstice, and that the best season for sport is in early September, when the *vendange* brings him down from his hidden haunts. I could never afford time, at least a fortnight being required, to make a bag, and though the spoor and sleeping-places were everywhere visible, I only sighted one, which scrambled out of view before a shot could be fired.

Our route lay up the Arz el Mu'allakah, or upland B'lúdán valley, which is bounded on the right by the B'lúdán block (Jebel el Ahhyár), and on the left by the Jebel el Shekíf. After one geographical mile from the village, we passed out of the limestone into a band of pure sandstone: it alternates with limonite, iron-revetted clay, slag-like masses, and purple grit, degrading into a blackish humus. In 2 hours (= $3\frac{1}{4}$ direct

geographical miles) we reached the Marjat 'Ayn el Nusúr, "Plainlet of the Vultures' Spring," showing some twenty fountains. The upper part is a *versant*, the northern waters escaping through the Wady el Manshúrah into the Colesyrian vale. After one direct mile from the "Vultures' Spring," we halted at a cold pond, the Birkat el Mudawwarah, or "Round Tank," which showed 54° Fahr., whilst the air was 65° Fahr. Here we collected a variety of water-beetles, which, according to Mr. G. R. Crotch, "are, from the arid nature of the country, rare, but abundant when found."

A little before noon, as the cloud-pack coming up rendered the air delightfully cool, we rounded the southern head of the Wady Manshúrah. The latter shows a big square block of limestone, split, not by contraction and expansion, but by Zú'l Fikár, the irresistible sabre of Caliph Ali. We afterwards saw several boulders in the same condition, but this was the only one with a legend attached to it, unlike the Sinaitic rocks, upon so many of which Hazrat Músá (Moses) has left his mark. Upon the col, or pass, dividing the Manshúrah valley from the Wady el Hossá (Husá), we picked up stones richer in copper than those of the old Wady Maghárah diggings.

The col presently placed us upon a conspicuous summit, the Ra'us Zahr Abi 'l Hin, "Head of the Ridge of the Father of Henna"—that is, of the wren, a name as sensible as Shrimp Mountain (Camarones), applied to one of the tallest volcanoes in intertropical Africa. It is the apex of the Manshúrah arc, which resembles the Cedar Valley, but upon a small scale. Here the wintry winds must rage furiously. The Lizzáb-juniper is blown to the north and north-east; a few young trees show that even the goats spare the place, and in the older growths the wood is ridiculously out of proportion to the foliage. The height of a tree girthing some 12 feet at 20 inches above the ground will, perhaps, be 10 feet, whilst the roots, peculiarly long and strong, will contain double the timber of the bole. The bilberry throws itself upon the nearest stone, and clings to it as though fearing to be blown away into space. And the rest of the vegetation, especially the rose and the thistle, is exceptionally stunted, when the actual altitude is considered.

From this summit we could see to the north-east, and divided by a water-parting, another steep valley, flanked by the axis of the Anti-Libanus, resembling the Manshúrah and the Arz el Mu'allakah, or upland of B'lidán. The eastern or higher lip is the normal crest of palisaded cliffs (Huwális), above which the goat-paths run, and it is capped by rounded summits of red-yellow humus, scattered over with stone. On the west are rock-waves and crag-islets, the "Ilheos" of the Portuguese,

separated by torrent-beds, which, like those of the Jebel el Shekif, drain the surface into the Ma'arabún gorge below. The unusual quantity of vegetation, especially juniper—by some mistaken for cypress—that finds a footing in the jagged limestone gives this view the most pleasing aspect. The chord of our second valley runs 33° 30' towards the Ra'as Rám el Kabsh, far on the N.N.E. As usual in these lands, the whole lacks a generic name; it is sectionally called after its springs, which patch the surface with nettles and green weeds, Wady 'Ayn el Báridah; Wady 'Ayn el Sakhrá; Wady 'Ayn el Za'arúr ("of the hawthorn"), and so forth. From above, the floor appeared smooth and easy, but experience proved it to be otherwise. The material is sandstone, alternating with lime, in detached blocks, forming what appeared to be sections of pavement. Plots of wheat and tobacco, which never pay tax nor tithe, flourish in sheltered places, but at times, when rain is wanting, the seed refuses, it is said, to sprout. In this part of the highlands such growths will extend to 6000 to 7000 feet above sea-level, and perhaps higher: the wheat is horny and stunted, and the people declare that grazing animals will not allow barley to be reaped.

We descended some 800 feet by the Wady Juwar el 'Akkúb ("Sinks of the Artichoke"), and we struck the No. 3 valley, where the 'Ákibut el Hamrá, a red col, is traversed by the Sa'gháyá-Rankús road. We passed successively on the left the Wady 'Ayn el Za'arúr, and the Wady el Naháir, the latter headed by a large cornfield. These names were given to us by the goat-herds. After a rugged ride, crossing the eastern crest of the Anti-Libanus, we fell, about sunset, into the Wady 'Ayn el Durrah, "of maize," which the Rev. Mr. Porter ('Five Years in Damascus,' p. 311, 2nd edit.) calls "fountain of Dura." This valley, well sheltered from the biting draughts of the passes, sheds from the western Sierra to the Assál el Ward upland on the east. It has a fine fountain, which waters horses and neat cattle, and which feeds a himah, or trenched field of vetches. The owner was a Rankús man, who, with his two shirtless and sharp-witted lads, occupied the place during summer—it is too cold for permanent settlement—and he passed his nights in shouting and in firing random shots to scare away plundering bears. We secured a kid. These animals, covered on the yurd, or upland, with fat an inch deep, contrast wonderfully with their lean, dry brethren of the plain.

After a cool night, we were in the saddle at 5.20 A.M. (Tuesday, August 1, 1871), and, traversing the Wady 'Ayn el Durrah, we ascended the direct mountain-road from Mu'arrá to Bualbak. Then, rounding the head of a parallel valley—the Wady el

Maksam—in which, as the name denotes, the highway anastomoses, we found on our left a dwarf depression, separated by a watershed from valley No. 3; this is apparently the north-eastern end of the lateral basins which subtend the western crest of the Anti-Libanus.

A ride of 50 minutes (= 1½ direct geographical mile) placed us at the head of the Wady el Hawá, a long depression leading from the chine to the south-western part of the Assál el Ward plain. It contains the 'Ayn el Hassiuf, and, some way down it, there is, they say, a ruin called Kabr el Shátir ("of the rogue" or "the running footman"), with a "Hebrew" inscription, probably some insignificant marks in the stone. We walked up the crest on our left, a prolongation of the Abú 'l Hin ridge, which gave us a fine front and back view. From that point, travelling along a knife-board, with a succession of Júrals, "sinks," or "swallow-holes," to the right, we headed the Wady el Marhalah, and, threading huge walls like egyptian masonry, we ascended the south-eastern flank of the Ráns Rám el Knsh, "Head of the High Place of the (Wild) Ram or Mufflon" (*Oris musimon*).

Here the regular cliff-like crest which we had followed on our left or westward from B'lúdán apparently ends, but presently to reappear as a central spine. We could see nothing in front (35° mag.) but a long perspective of lateral ridges, running parallel, but palpably detached, and broken ranges streaked with trees, and evidently parted by the deepest gorges. The general direction is somewhat south of east (80° to 100°), towards the Assál el Ward plain, and the drainage eventually feeds the waters of Yabrud. Their names, we afterwards learnt, are—1. The Wady Bir Sahrij, which lay at our feet. 2. The Wady Bir el Washil ("of water-pits" which never dry): this Fiumara anastomoses with the lower course of the former. 3. The Wady Zuwayyik, or the "narrowish," said to contain ruins. 4, 5, and 6. The Wadys Butrah, Za'arir and Bir el Khushbah, the latter rounding the southern base of Naby Bírúh, whose hogsback arose in the distance. The "Prophet" was backed by a cone, which we presently were able to call Tala'ut Músá, whilst, far upon the north-eastern horizon, appeared the Haláim block. Evidently we might have kept our course along the western ridge by rounding the valleys for some 6 miles, which would have brought us to cultivated ground. But we wanted a guide, and our horses were threatened with thirst, as well as with hunger; so we resolved to follow the nearest long depression, which we knew must lead to the Assál el Ward village.

Descending into the Fiumara head, we struck the excellent road of a slate-like surface, naturally macadamised, which threads the gorge. Its most remarkable growths are the barberry, the

trne currant (a *Ribes*), and the wild honeysuckle. After two hours we came upon the Bir Sahrij, an old and solidly built well 12 feet deep. Then, cresting the tall ridge to our left, we saw broken and detached rocks, perfectly simulating ruins. Here was the anastomosis of the Wady Bir el Washil. Lower down, the heights were scamed with paths; wood-cutters, charcoal-burners, and goatherds, presently appeared, and, finally, cultivation marbled the gentler slopes. Mortally long seemed the rest of the way. After a ride of $10\frac{1}{2}$ direct geographical miles down the Quebrada, it was 11 A.M. before we debouched upon the plain of Assál el Ward.

The Wady Bir Sahrij evidently divides the comparatively well-watered southern section of the Anti-Libanus from the parched and dusty northern half. We can only suggest that here the limestone formation becomes more deeply cracked and fissured, and less able to retain the springs, which directly disappear underground. The same rule holds good in the Libanus, where the northern and higher is less fertile than the southern and lower half.

We halted within sight of the large bluish-grey ash-heaps and hillocks upon which Assál el Ward is built, and of the dozen poplars that garnish its upper spring. My old friend Shaykh Sálìh gave us the usual hospitable welcome; here the people, uncorrupted by travellers, are always civil in the extreme. The men, Shaf'ri Moslems all, may muster 250 guns; they are more intelligent than usual, and are never unwilling to fight. Assál "of the Rose" is a well-to-do place, and the cold keen air, which compels the houses to be windowless, reddens the fat cheeks of the children, and preserves the fresh complexions of the greybeards.

On the next day (August 2) we set out betimes, accompanied by my good friend Shaykh Kásim, our host's brother. We took the southern or upper road to the hog'sback, a little Hermon known as Jebel Naby Bárúh—"of Barnah the Prophet." No one pretends that the Scribe actually visited this wild spot, but a dream or a vision always suffices to create a place of holy visitation. There is also a northerly line, *viâ* Wady el Maghírah, where a cavern is said long to have sheltered certain rebels of the Harhísh family. Dismounting beyond the vineyard, we walked up a stiff slope, lying nearly north-east (mag.) from Assál el Ward, and we inspected the Maghírat Taht el Karnah ("under the horned hill"); the cave proved to be partly artificial and partly natural. Conspicuously seated on the summit of the same eminence are the ruins known as Dayr Taht el Karnah or Wady Bárúh; they bear 5° from Assál el Ward, and 34° from the Bárúh summit. The remains are evidently

those of a Baal temple, converted into a church and convent, and we came to the conclusion that it was perhaps the most ancient which we had seen throughout Syria and Palestine.

Resuming our ride towards the mountain, we entered its eastern outliers, and passed on the left the Wady Za'arúr, up which there is a foot-path to Baalbak. Thence crossing a high hill-spur, we fell into the level at the south-eastern base of Jebel Bárúh, and we visited the (eastern) Bir el Khashabah, which gives its name to this Wady; the well was, however, almost dry. From that point my friend walked up the western slope of the hogsback, whilst I followed the south-western path, which my party had taken in November, 1870. The latter, beginning through cultivation, zigzags over broken ground, which here and there caused all to dismount, and leads after some 50 minutes to Makám Naby Bárúh. The "visitation place" is a rude circle of dry stone wall, utterly modern, and built by the well-known Ruffá'i family of Yabrúd, descended from the great Sufi Ahmad of Baghdad.

We resumed our way to the north-eastern peak, upon which eight months before I had built a cairn or bench-mark. The apex gave us a view to the north-east, before concealed; here rose straight in front of us the Shaykh el Jibál, "le Roi des Montagnes," the very summit of the Anti-Libanus. It is variously called from its component parts Tala'at Músá; Jebel el 'Awwaj, from a Wady and a village; Jebel Fatli, after a deep bay in the mountains; and Jibet el 'Uyún, from certain unnamed springs. We distinguished it as the "Fatli block," supplementing the absence of a general term amongst the natives. When asking for it, however, the traveller must call it Jurd Mu'arrat el Bashkúrdi, and carefully distinguish it from the Ra'us Raff'a, alias Raff'a Mu'arrá, a reddish buttress, prolonged to the north-east (46° mag.) of the Fatli proper.

After resting under a juniper, we rode along the northern crest, and an hour's march placed us suddenly upon the Wady el Fatli. This gorge, which divides the Naby Bárúh block from the apex of the Anti-Libanus, yawns some 700 feet deep, and in many parts is impracticable. We had some difficulty in getting down our baggage animals: arrived at the Bir el Fatli, a well sunk 10 feet in the shelly limestone, we not a little surprised the civil goatherd As'ad ibn Yusuf, whose green turban showed that he belonged to a Holy House.

Resuming our way, we crossed the Wady el Fatli, and then breasted the Anti-Libanus summit, by an easy incline known as Tala'at Músá, "the Ascent of (a?) Moses." After some 45 minutes (= 1½ geographical mile) we stood on the top. From this commanding site we observed that the apex forms a regular circle

of ridge, which viewed from below, and indeed from almost every quarter, assumes the appearance not inappropriate of a mural crown. The "Fatli block" is bounded north by the greater Wady el 'Aawaj, and south by the Wady el Fatli. The highest point (Ru'as el 'Aawaj) that caps the crest, and bears $18^{\circ} 30'$ (mag.) from the summit of Tala'nt Músá, was shown by a small clinometer with spirit-level to be some 20 feet higher than that upon which we stood. The mercurials, afterwards corrected by the mercurial tubes, and computed by Captain George, R.N., gave 8721 feet; the temperature was 75° (Fahr.), showing that the Tala'nt Músá height cannot be less than 8740 feet. Thus the true apex of the Anti-Libanus, from which the Cedar Block bears $311^{\circ} 30'$ (mag.), is not at the south where MM. Porter and Gérard have placed it, with an inadequate allowance of 6800 for 7736 feet, nor at the extreme north, where Lieutenant van de Velde has located it, with the shabby establishment of 5000 feet, instead of 8257 feet. Its real position is at the head of the second third beginning from the Hermon, and thus it is almost a central massif.

Descending the eastern slope of Tala'nt Músá, and winding down the southern flank of the Raffá Mu'arrá, we fell into the vineyards and fig-yards outlying the little old settlement Mu'arrat el Bashkúrdi, of the "Mad Kurds." The peasants insist upon entitling it Básh-Karriyah, "the Mad village." As it is mentioned in the guidebooks, I need say nothing about it; in this out-of-the-way place we were of course hospitably received: the Shaykhs, who, according to custom, number half-a-dozen, contended for the honour of lodging us, and Shaykh Sa'id carried away the prize almost by force. He also told off a brace of his relations for the consideration of ten piastres or two francs per diem to guide us on the next day, and we soon found out that we had to guide Sa'id and Táhir.

At the late hour of 8 A.M. (August 3) we bade adieu to our host, and took a northerly direction, with bends to east and west, over the Kára-Nabk upland. Here the wintry cold is extreme, explaining the native saying—

"Payn Kára wa Nabk
Banát el mulúk tabki."

"Twixt Kára town and Nabk the Steep,
Daughters of kings (i.e. fur-clad women) must often weep" (for cold).

Hard by on our left lay the long line of the northern Anti-Libanus; the blocks and buttresses were separated by Wadys, of which the most important is El Zummarání, "the Piper," so called from the wailing music of its wintry draughts. The course is a little south of west (mag.), and from its mouth Kára town bears 85° (mag.). It is the southern limit of the

Haláim properly so called. The classical Arabic word would be Hilmah (حلمة) in the plural Halmát ("nipples"), here corrupted to Halimah and Haláim. Viewed from the eastern heights, this northernmost block of the Anti-Libanus seems to consist of a range ending north and south with two great buttresses; whilst the latter supports a broken stony line of paps and cones somewhat inferior in elevation. The four greater Haláim running from south to north are—

1. Halímat Wady Zummarání, bounded on the south by the Piper, and north by the Eastern Kurrays; the long saddle seen from Nabk to the south-east suggests an elephant's back with head and ears.

2. Halímat Kurrays, "of the Edible Nettle." From the eastern plain it appears a table-mountain: one standing upon the northern heights sees a double and parallel line, bearing north-east to south-west, separated by a gorge, and connected by a band of rock.

3. Halímat Kur'á (قرعا), "the Bald Pap," because comparatively bare of trees, also called Halímat Kárá, from the neighbouring town of Kárá, the Comochara of the Greeks. It is a round and humpy eminence, presenting to the eastern plain two large and sundry smaller shields of limestone, whose strata are almost perpendicular.

4. Halímat el Kabú (قبو) "of the Covered Cistern;" this pass is called *par excellence* El Halímah, but not "Jebel el Halímah (Van de Velde). From the eastern plains it appears a small saddle-back topping the Kar'á (No. 3), and hardly to be distinguished as a separate feature, although parted from it by a deep gorge. The Cedar Block shows it standing boldly up; seen from between Hasyah and Hums, it rises during the winter a tall snowy peak. North of Jebel el Shekíf it is the only feature given by Van de Velde (Stanford's edition), and he declares it to be the "highest top" of the Anti-Libanus, which it is surely not by 460 feet.

At the mouth of the Wady el Mál, the next in importance to the Zummarání, we beft west towards the nearest water. The col was remarkably easy, and hence a descent led to a bubbling fountain, the Washlat Kurrays, at the southern end of the western "Nettle-pass," and heading the great Wady Fárih. It lies 5 hrs. (= about $12\frac{1}{2}$ direct geographical miles) from, and almost due north of, Mu'arrat el Báshkúrdi.

After resting, we proceeded to ascend the Halímat el Kabú. Descending a deep valley, we fell into the Sultani or high-road from Fikah to Kárá, which runs up and down the Wady Már Tobíyá (St. Tobias). Then turning suddenly to the left, we

ascended in 10 minutes the long south-eastern spur. The upper fourth of the peak is revetted with hard limestone rock, compelling horses to go round by the north. The Kákúr, or stone man, which I had planted on the summit, was found overthrown probably by treasure-hunters. Here we caught a number of lady-birds (*Coccinellæ*) nestling under the stoues as in the chinks of the dome of St. Paul's.

An east-west section of this the northernmost line of the Anti-Libanus gives—

1. The outliers of the main ridge, such as Jebel Kar'á and its dependencies, called the Hurúf of Mar Tobíyá; 2. The Halímat el Kabú, which is the eastern apex of the main block, and bounds a large valley opening and draining to the west; 3. An upland plain of rolling ground, broken and treeless, but not wholly uncultivated, shedding towards Cœlesyria; and 4. The western ridge of rough and barren hill which forms a right bank for the head valley of the Orontes.

The prospect from the Halímat el Kabú is at once extensive and picturesque. Southwards, where there is the finest view, appear in lengthened perspective, and differently tinted by distance, the several planes of ridge separated by their respective gorges. Below the vertical precipice under our feet, and beyond the skirts of the Halímah, rise the two parallel lines of the Kur-rays, steep savage hills, flat-topped, and disposed like dykes, their sides banded with stony outcrops, and dotted with the darkest juniper. Farther off in the bluer air stand the waving Hurúf of Abú Idrís, backed by the Sadr el Bustán and the Hurúf 'Ayn Sharkiyín, "the points or peaks of the Fount of the Easterns," a labyrinth of ranges and chasms. Farthest upon the azure horizon is the diademed head of the Fatli apex, still showing three peaks, and connected by a narrow ridge with its subject height, the Ra'as Raff'a Mu'arrá. Contrasting with these bold altitudes lies the south-eastern plain of Assál el Ward, divided from the Kárá-Nabk terrace by the picturesque Sierras of Marmarín (or Danhá) and Rankús. To the west, beyond the valley of the Orontes, where the white patch of the Hurinul village and its decaying pillar are conspicuous, rises the lumpy dome, reddish-yellow and tree-dotted, known as the Shu'arah of Baalbak, the outworks of the highest Libanus. Above this feature towers the bold chine of the Cedar Block, upon which still linger long lines and large spots of snow, which glow like amethysts in the evening light. The three summits, of nearly equal altitude, fret the sky-line, and the 'Uyyun Urghush buttress is set off and detached from the wall-like surface by the shadow which it casts upon the lengthy and regular ridge that backs it. Farther north, the apex of Libanus falls into the Jurd of Tarabulus

(Tripoli), speckled with black points, and dotted with cones, while farther still the mountains are absorbed by the valley of the Nuhr el Kabir, the Eleutherus River. To the west there is a gleam of distant sea, adding another glory to the view, whilst, almost melting into a blue cloud of hill, the Jebel el Húláh, or southernmost heights of the Jebel Kalbiyyah, defines the haunts of the mysterious Nusayri. Between the S.W. and S.E. the glance, passing beyond the foreground of ever descending ridges and hollows, falls upon the Orontes Lake and thready stream; upon the rich cultivation of Hums and Hamáh, one of the gardens of Syria; upon the tiny clumps of trees, each denoting a settlement; upon the ridge of Salámiyah, that outpost of ancient Tadmor, and upon the unknown steppe* El 'Aláh and the Bedawi-haunted tracts which sweep up to the Jebel el Abyaz, whilst on fine days, it is said, the castle of Aleppo bounds the northern horizon.

After observations we descended the S.W. flank of the Halímah, guided by a civil goatherd, to inspect the Kabú or vault which gives a name to the peak. At the very base we found the ruins of a small and rustic sun-temple, and farther to the north-east a dry cistern, which might be of any age. From that point a weary ride, rounding the western flanks of the Halímah, and many a long and rough ascent, led us back to the encampment at the Kurrays fountain. That day had given us 15 hours of hard work, and we uncommonly enjoyed the fine cool night, illuminated by the first annual fall of "shooting stars."

On the next morning (Friday, August 4) we resolved upon returning to Assál el Ward by a long circuit to the south-west: thus we should be able to prospect the third part of the east-west section of the northern Anti-Libanus, including the Baalbak crest, which we had missed by travelling down the Wady Bir Sahrij. Our course began down the long Wady Fárih; we then passed on the left the Wadys el Dubb, "of the Bear," and of Zúmmarání, "the Piper." At this elevation, the Fiumaras, whose mouths are so deeply cut and precipitous where they debouch upon the Assál el Ward terrace, disappear in the upland plain of rolling ground which bounds the main ridge on the west. We afterwards found the same to be the case at the Baalbak crest; and it became at once apparent why the gorges of the Anti-Libanus opening east and west bear different names. In Arabia generally Wadys are seldom called the same on both sides of a watershed; here, however, there is no connection

* It has lately been explored by my friend and fellow-traveller, Charles F. Tyrwhitt-Drake, and I have published in 'Unexplored Syria,' his account of a most adventurous journey.

between them and the lines of road, as the valleys traverse, as it were, neutral ground.

The Sahlat or plainlet at the head of the Zummaríní was cultivated with upland wheat, a pigmy growth of a few inches. The country was well clad with wild almond and pear, whilst the abundance of maple suggested that the sugar-tree of southern Italy and Canada might here be made valuable. Presently we struck upon a large and well-defined Fiumara, which, as usual, rejoices in as many names as an Iberian grandee. Here it is called Wady Khirbat Yunin, from a deserted settlement, apparently of the old Troglodytes, which hugs the left bank of the torrent-bed. We then fell into a road running north-east to south-west, with sundry windings, and separating the Bilád el Sharkí (eastern countries) about Kára from the western, the Bilád el Gharbí, whose head-quarters are Baalbak. The valley is hemmed in and protected on both sides by hill and mountain, mostly stone-lined and cliff-topped; over the sole were scattered ploughed fields, and, with the assistance of tanks and cisterns, it might once more become a land of plenty. Now it depends wholly upon the rains, which at these altitudes are even more precarious than the snows. It wants a Brigham Young to order a round million of trees.

Presently we came upon the western Bir el Khashabah, a masonry-lined pit 10 feet deep, which gives its name to the southern prolongation of this long line. Its continuation, the Wady el Hikbán, becomes more irregular, closing in and flaring out. Then begins the Wady el Ruhwah, bending to the westward, a *ria mala* only 10 to 12 feet wide, with tall, upright sides, and a floor of white limestone, polished like glass by the myriad hoofs of goats and sheep. The sun, which in the lower valley had scorched us, and had made our muleteers very quarrelsome, was now tempered by the cool brisk atmosphere of the heights, and the novelty of the scenery was charming to our eyes.

At length, traversing a small black circus, a *rond-point*, where the charcoal-burner had been at work, we debouched upon the Wady el Biyará,—"of the wells." As usual, it is a widening of the Fiumara, a meeting-place of four shallow passes. We had travelled 4 hours 50 minutes, representing some 10 direct geographical miles, from the Washlat Kurrays, and were not sorry to take rest in a pair of dwarf caves.

As the flocks began to gather, we resumed our way to the north-west, exchanging the Wady el Biyará for a succession of stony ridges, which led to the Wady Barbarús ("of the barberry"). In this shallow slope we found two wells, the lower scanty, the upper full. Many goatherds, all more or less armed,

were here watering their charges, and their aspect, gestures, and manners, showed that a fight at the well is as easily managed now as in the days of Abraham and Lot. We vainly endeavoured to hire a guide; all refused to leave their charges.

Travelling for thirty minutes over a down-like country, with gentle waves of grassy ground, and for twenty minutes across up-land cultivation, we traversed a short divide of limestone ready cut into self-faced slabs by Nature's hand. Here and there it was piled up in landmarks, to show where the flocks might and might not go; the stranger will everywhere find in Syria and Palestine these primitive contrivances, which, however, cannot privily be removed, as every neighbour knows every inch of his own ground. Presently we sighted to the left, or E.S.E., the lofty walls of the Wady el Fatli, and here a goatherd, who had been a linesman in the Sultan's army, and who had fought in the Crimean campaign, gave us exact directions. The guides declared that he was sending us a long way round, but we preferred his certainty to their uncertainties.

We then passed into El Khashshá'a, the rough red region lined with trees which we had seen bearing westward from the summit of Naby Bárúh: apparently this outcrop is a central spine, which continues the cliff-crest facing to west between the Jebel el Shekf and the Ra'as Rám el Kabsh. It is a goatherd's paradise, a succession of the hardest limestone crests and ridges, bristling with bare rock and crag that shelter tufty vegetation, and divided by such a continuation of grassy Júrah's or swallow-holes, that we could find no better name for it than "Sinkland." These features are rarely round, mostly of the long-narrow order; now they are single, then a huge pair will be parted by a natural bridge. The junipers are mostly large and patriarchal, but in some places we saw young shoots; clumps are rare, and the branches invariably grow so low that nowhere could we have ridden under their shade. The road of polished stones and steps, with sidings in the worst places, leading from the Asál el Ward plain to Baalbak, was distinctly bad: in most parts a horse could hardly have travelled off the path, and each tongue of ground, however well covered with humus on the top, was bounded on the sides by falls of stone, which the rains, snows, and winds had laid bare.

After 1 hour 10 minutes of slow riding to the west, we passed out of the Khashshá'a proper. The country again became a counterpart of the down-land above the Wady Bir el Barbarús, although in places it was scattered over with vertebræ from the main spine. The hollows contained mud, the result of the heavy showers which had fallen between the 26th and 29th of July, and the limestone again changed from rough lumps

to thin slabs. Another 40 minutes upon the high-road, spanning shallow rises and falls, placed us at the head of the Wady Jammálah; here the watershed changes, and the path drops westward into the Cœlesyrian plain.

Then turning a few paces to the right, we found in a swallow-hole the Hajar el Mukattab, or "written stone," of which every goatherd had spoken to us. It was a block of limestone, whose edges had been chipped off by the treasure-seeker, and it bore a mutilated mortuary inscription in Greek. Upon the summit of the sink-hole's western lip lay another "written stone"; the legend, however, was too much defaced to be worth copying. About it was strewn a shapeless scatter of ruins; some of the blocks were of considerable size, but there was nothing to tell whether the site had been part of a temple or of a townlet.

From the Hajar el Mukattab we rode a short distance down the head of the Wady Jemmálah, which, as is here usual, appeared to become narrow and gorge-like as it descended. We then struck abruptly to the south-east, across country, over sundry sinks and divides, the latter mostly grown with an asphodel, whose vein-like leaves are refused by horses, and whose tall thin stem has obtained for it the name of 'Asáyat el Rá'i, "the Shepherd's Staff." Near the Dead Sea it is called 'Asáyat Sayyidna Músá, "of our Lord Moses," and Burekhardt says that it makes good glue. After 50 minutes we reached Khirbat 'Ayn el Shams ("Fountain of the Sun"), which is included in the Jurd ("uplands") of Baalbak; its title has a significant resemblance to Heliopolis. On the north of the ruins is a large swallow-hole, while to the south a deeply tunnelled cave, with a fragmentary ceiling and a dry sole, may of old have represented the solar "eye." The Khirbat is evidently a little rustic temple, roughly Oriental, and mostly composed of uncut stones set in cement.

We then rode northwestward, up a dwarf eminence, to the Dayr or monastery, a rude hermitage, built of the slabby limestone scattered all around it. After that, our course lay southwestward in the direction of the Kala'at Jubá'b ("of the wells"), the high cliff defining the left jaw of the Fiumara so named. It is no exception to the general rule which makes the western Wadys of the two Libani better forested and more fertile than those opening eastward—the effect of the damper sea-winds. After crossing the usual succession of divides, we struck in 20 minutes the right side of the picturesque ravine, and, descending by a goat-path into its sole, we reached the upper well in 25 minutes. The bottom was the usual excellent travelling, and the drainage of the spacious bulge in which the water lay was derived from three large and three smaller torrent-beds. Closely cropped

grass still carpeted the ground, and semicircles of dry stone, opening to the west, defended travellers from the raw eastern or land-breeze which at night pours down the gap. We were not sorry to rest and warm in the genial blaze limbs somewhat cramped by 9 hours and 30 minutes of hard walking and slow riding.

At dawn on the next day (Saturday, August 5) we discharged our muleteers, at their own request, and gave them pay, presents, and provisions for their way home direct to Blúdan. At 5 P.M., mounting to the tune of many benedictions and valedictions, we rode gaily to the south-east up the Wady Jubáb. The upper part soon breaks into sink-holes, and reaching the counter-slope after 20 minutes, we fell once more to the Khashshá'a, which we had crossed diagonally on our last march. This rough ground again cut off all connection between the gorges opening into the eastern and western lowlands. Sundry paths struck to the north or left, and an error in the bearing of a mountain made us cut across for the direct track leading due east to Mu'arrat el Bashkurdi. Presently, guided by the well-known hogsback of rugged old Bárúh, we fell into the comfortable Wady which prolongs the "Bayn el Kala'atayn" gorge into the eastern Fiumara of the (eastern) Bir el Khashabah. Our horses were starving, and the loosening of their foreplates threatened to lame them; this untoward state of things prevented our seeing the Hajar el Manshúr, or "Sawn Stone," known as 'Abid el Rumád—it is said to lie in a lateral Cañon north of the Wady Jubáb. After a total of 3 hours 30 minutes direct from theighting-place, we found ourselves once more in our former quarters at Assál el Ward. The whole march had taken a somewhat longer time, I was anxious to find a level path leading from the village to the south-eastern slope of Naby Bárúh, and, obeying my memory, I found how easy it is, in these regions, to get off the road, and how difficult it often is to recover it.

That day ended with a gallop of 16 to 17 miles, to the market-town of Yabrud, where we were anxious to inspect certain skulls and mortuary lamps, lately found in a tomb near the settlement, and kept for us by the energetic young schoolmaster Ibrahim Kátibah. Early on the next day we returned once more to Assál el Ward, and were duly escorted by the Shaykhs to a ruined Doric temple, distant 2 hours' ride, and known as Kasr Namrud ("Nimrod's Palace"). It was late before we sighted the whitewashed dome, which covers the remains of Shaykh Mohammed el Na'ananawi, the patron saint of Talsitá. We were received with all the honours by the Shaykh el Balad Mahfúz, and by his villagers, who had long been my clients:



half their pauper homes had been destroyed, and the rest were threatened with ruin by certain villainous usurers under British protection. On the next morning we rode into Damascus, *viâ* the well-known Wadys of Minnîn, Mn'araba, and Barzali, rich and well-watered gorges, whose dark green lines in the barren yellow hills are miniatures of the typical Barada valley. They are known to every handbook.

Our excursion over the Anti-Libanus had lasted eight days, between July 31 and August 7 (1871). We had seen four temples, of which three are probably unknown. We had prepared for local habitation in the map of Syria and Palestine the names of five great mountain-blocks, Abû 'l Hîn, Râm el Kabsh, Naby Bârûh, the Fatli apex, and, to mention no others, the curious Hahûm. We had traced out the principal gorges, the Wady el Manshûrah, upon whose upper lip an outcrop of copper was found; the Wady el Haûr, the Wady Bir Sahrij, the Wady Zummarânî, the Wady el Mâl, and the Wady Mâr Tobfîyâ, before absolutely unknown to geography.

XVII.—*Journal of a Tour through parts of the Provinces of Echigo, Echû, Kaga, and Noto, JAPAN: April 3rd to May 4th, 1871.* By J. TROUP, Esq.

April 3rd.—Started from Nûgata at 8 A.M., arriving at Akatsuka at noon, and Yuhiko in the evening. Found the peasants occupied in manuring the corn-fields, and such-like operations, the snow having disappeared from the low grounds. The Shinan-gawa was flooded from the melting of the snows in the mountains, and much of the rice-lands were still under water. Yuhiko is a village of some eighty houses, and is the chief seat of the Shinto worship in Echigo.

4th.—Proceeded from Yuhiko, through Teradomari, Yamada, Idzumozaki, and other towns and villages, to Shûya. Visited the works on the cutting in progress from the Shinan-gawa to the sea near Teradomari, and found they had made considerable progress since my visit to them last year; workmen having been employed on them, while the weather permitted, during the winter. In view of the progress hitherto made, however, it is clear that the cutting cannot be completed this year, notwithstanding the statements repeatedly made to me that it was intended to have it opened in the autumn. Observed in the lower parts of the cutting that, under the sand, beds of slaty clay in some places, and of shale, showing an inclination here and there to turn into lignite, made their

appearance. Idzumozaki is a town of some 2500 houses, and has a small coasting trade, similar in kind to that of Nūgata. Observed scarcely any articles of European manufacture in the shops, either here or at Teradomari. Shūya, the residence of a small Chihanji, contains only from 200 to 300 houses.

5th.—Left Shūya, and passing through the town of Kashiwazaki and a number of villages, arrived at Hassaki in the evening. Observed at Kashiwazaki a few European goods in the shops,—such as overcoats, blankets, leather-bags, glass-ware,—and was informed that they came from Yokohama overland. Kashiwazaki contains about 6000 houses, and has a small shipping trade like Idzumozaki. It is the residence of a Chihanji, with whom I exchanged complimentary notes in passing through. In the afternoon, the weather being favourable, proceeded by boat from Kujira-nami to Hassaki, and thus avoided the laborious road over the lower ranges of Yoneyama. The rocks abutting here on the sea are of a trappean formation. Observed several earthworks facing the sea, and apparently intended to protect the road, which here runs along the top of the bluffs overhanging the sea, from interruption from that quarter. Only two of these, however, seemed fit at present to receive guns. This is within the Takata territory. In the evening, at Hassaki, an officer from the Takata Han arrived to meet me, and I was escorted by him and another through the territory of the Han.

6th.—Proceeded from Hassaki to Arima-kawa, through the port of Imamachi and several post-towns and fishing villages. Violent storm of wind and rain all day. Imamachi ranks as a port next to Nūgata on this coast. The bluffs abutting on the beach, after this place is passed, are of a shaly nature, with traces of lignite cropping out on the shore. From here, leaving the beach, the road runs over a range of hills, but strikes the beach again before Arima-kawa is arrived at. Found snow in some places still lying here to the depth of 3 and 4 feet.

7th.—Fine weather again. Left Arima-kawa in the morning, and proceeding through a number of drowsy-looking fishing villages, and the town of Itoigawa—the seat of a small Chihanji—arrived at Uta in the evening. In the forenoon passed along the foot or spurs of a high range of bluffs, of stratified alluvial deposits, which intervene between the beach level and the higher mountain ranges farther inland. Snow was still lying on our path in many places, but the spring flowers had already made their appearance where the ground was open. The flowers of the tussilago covered the slopes, and, in a few favoured spots, clusters of a wild anemone showed themselves. Observed that small earthworks were placed at intervals along this coast,

usually near the villages—none of them, however, contained guns. In the afternoon, just before arriving at Uta, passed along the foot of a range of grey granite cliffs, with patches of limestone here and there towards their eastern end. The limestone is burned here on the spot, in kilns, with charcoal brought from Noto.

8th.—Left Uta in the morning, and proceeded still along the beach, between the mountains and the sea. Passed the place named “Oya-Shirazu,” where, in stormy weather, it is evident—as I had been assured so often before arriving here—that passage between the mountains and the sea must be impossible. As no inland road appears to exist through these mountains, the barrier must then be a very effective one, and the cutting a good road through the cliffs, which are high, and consist of the hardest silica, would be no trifling undertaking. It is nevertheless an instructive commentary on the spirit of exclusiveness, which has maintained itself so long among the princes of this country, to know that such is the main high-road between the important provinces under the jurisdiction of the Prince of Kaga and Yedo. A short way beyond Oya-shirazu, crossed the small stream which separates the Provinces of Echigo and Echiu, and the territories of Takata and Kaga. Shortly after entering Echiu, the road emerges from between the mountains and the sea, and it was a relief, after passing such a length of beach—viz., all the way from Teradomari—to have the view of the plain of Echiu stretching out before the eye. Found on entering Echiu that the breaking-up of the rice-fields had already been commenced. At noon stopped at the post-town of Tomari, passed through several others in the afternoon, arriving at Uwozu in the evening. The district passed through, although fertile, compares disadvantageously with the rich plains of Echigo. Much of it is periodically laid waste by the violence of the streams crossing it, and which are subject to great and sudden inundations, against which no efficient precautions appear to have ever been taken.

The crops consist of the usual rice, wheat, barley, rape, root-crops, &c. The town of Uwozu is of some size, and has a small shipping trade in summer. The number of inhabitants may be put down at about 15,000. The manufacture of cotton-cloth is carried on in this neighbourhood, the raw cotton used being brought principally by sea from Osaka. Fish is largely exported from this place.

9th.—Left Uwozu in the morning, and travelling through a country similar in its nature to that passed through the previous afternoon, stopped at mid-day at Toyama, a large town of probably over 50,000 inhabitants, and the seat of a Chihanji.

The preparation of Japanese medicines, working in leather, and other industries are here carried on.

In the afternoon, after leaving Toyama, passed through a low range of hills, on which there were some tea-plantations, with mulberry-trees intermixed.

In the evening I arrived at Takaoka, having previously fallen in with an escort sent by the Chihanji of Kaga to meet me, and which continued with me from this time until I finally quitted the territory of the Han.

Takaoka is a trading town of some 30,000 inhabitants, and in its neighbourhood the manufacture of cotton goods is carried on, and some silk reared. Dyeing, hardware manufacture, and such-like, are carried on in the town.

10th.—Left Takaoka in the morning, and proceeding still through the plain of Echii, and passing one or two post-towns or villages, arrived at Inn-isurugi, a town of say 8000 souls. The country towards the eastern part of Echii, after passing Toyama, appears richer than towards the western side. The manufacture of iron-nails, leather-work, umbrellas, lacquer-ware, and wooden utensils is here engaged in, and some silk is also reared in this quarter. In the evening arrived at Tsubata, passing over two ranges of hills of no great height, on which considerable plantations of the mulberry were to be seen.

Crossing these ranges, and coming into the plain of Kaga, the wheat and barley crops were found to be further advanced than in Echii, indicating a somewhat milder climate.

11th.—Proceeded from Tsubata to Kanasawa, arriving at the latter place about noon; on entering the town, was accompanied by an additional escort of mounted men, and received by several officers of the Han at my lodging.

12th.—Towards evening took a walk through the town with some officers of the Han. Kanasawa is a peculiarly clean town, an advantage which it probably owes chiefly to its situation on gently undulating ground, through which two large streams find their way in their course from the mountains to the sea. The hills above the town command a very fine view over the plain, which stretches both to the right and left, and in front from the town to the sea. The population of Kanasawa is so variously stated, that it is difficult to form a reliable estimate of it. Considering however the extent of ground covered by the town, I am disposed to think that the smallest estimate I have heard of it is probably the nearest approach to the truth. This places the number of houses at between 18,000 and 19,000 and the population at under 60,000—that is, of the mercantile and industrial classes—and if this is an approach to the truth, it

appears difficult to understand how such a figure as 400,000—at and even above which the total population has been stated—can be made up. The houses of the town are in general of a construction decidedly superior to the average of those of Japanese towns, and the principal streets are wide and clean. The pottery of the province—known as “Kutani-ware”—is to be met with here in quantity, and the manufacture of Japanese medicines and such-like is carried on. It is, however, from its being the capital of the wide and rich territories of the Chihanji of Kaga, that Kanasawa derives its chief importance.

13th.—Proceeded from Kanasawa through Matto, Matoyoshi, the castle-town of Komatsu, and some other places, arriving at the village of Yuburibashi in the evening. Matto and Matoyoshi contain some 1000 houses each, the former locality being the seat of some cotton manufacture, the latter a well-built, if small, trading port. Komatsu, the original capital of the Daimios of Kaga, is a place of some 3000 houses, where several petty industries, such as the manufacture of nails, &c., are carried on. The silk of Komatsu is of some importance. During the afternoon of to-day passed through plantations of the mulberry and of tea, the former of large extent. The grain and other crops appeared still further advanced as I proceeded.

14th.—Left Yuburibashi early in the morning, and arrived at Daishoji before 10 o'clock, passing through a fine country of rich land well cultivated. The low grounds are laid out in rice-fields, then comes wheat, barley, rape, &c., while mulberry-plantations and some tea occupy the slopes of the low hills along the foot of which the road runs. The hills are formed of a reddish-yellow clay, from which the pottery of the Province is made. Was occupied most of the day at Daishoji in official business. In the evening visited the potteries at Yamashiro and the sulphur-baths at the same place. Silk-culture is pursued in this neighbourhood, but not with much success. Daishoji, although the seat of a Chihanji is a small town of only some 1000 houses. The industries pursued here are not of much importance. Some tea is produced in the neighbourhood.

15th.—Left Daishoji by the road I had come by, and arrived at Komatsu about noon. Was stopped at the river at Minato by the floods, and had to remain there over-night.

16th.—Left Minato in the morning, and arrived about 2 p.m. at Kanasawa. Was occupied with business in the afternoon.

17th.—Left Kanasawa in the morning, and passing Tsubata, diverged thence into the road leading to Nanao. Passed the night in the village of Shiho. The road from Tsubata to Nanao is almost level all the way. The villages on it are not of any importance. Wheat and barley are the usual crops of the

district, until the rice-plain stretching backwards from Nanao is reached. Fishing is also a principal occupation of the villagers. The hills near the road are of sand, gravel and clay, and usually wooded. Lime is burned not far off.

18th.—Left Shiho in the morning and arrived at Nanao by noon. In the afternoon visited the iron factory on the eastern side of the town. It is now in the hands of private individuals, but is not much worked. A few men were engaged in making some iron castings. The coal used here is brought from Isobei,—distant some ten or twelve miles from Nanao. Walked through the town, and out to the Bluffs on its western side, where a fine view is obtained over the spacious harbour. The town of Nanao contains 1983 houses, and 8653 registered inhabitants, of whom 4175 are males, and 4478 females. There are five houses engaged in the business of shipping agencies, and thirty-four general merchants or brokers. Fifty-three junks are registered as belonging to the port. The houses of the town are by no means of superior construction. One or two good godowns are situated in the centre of the town. Awabi and other dried fish are exported from here. Nanao derives its importance from its position as a port and emporium, and the possession of a fine harbour.

19th.—Left Nanao in the morning, and crossing over the mountain pass which separates the province of Noto from that of Echii, arrived at Himi for the night. There is said to be a vein of copper not worked, at Sekide-san, about a ri from Ninomiya, some six miles from Nanao. Visited the coal-workings at Isobei. The seam appears to be about three feet in thickness of an anthracite coal; but where it has been worked, the coal is much mixed with gravel and earth. The working is carried on in a very intermittent and imperfect manner. Himi is a small port of some 1000 houses, and exists by a small coast trade and fishing.

20th.—Left Himi in the morning and arrived before noon at Fuseki, which together with the adjoining places, now united with it under the name of Shin-Minato, forms the largest port in Echii. The river at this place is pretty large and admits junks of 800 to 1000 kokus burden. I counted 128 junks in the river, of from 200 kokus to 800 kokus burden, besides smaller craft. After passing along by the beach for some distance, the road diverges inland towards Toyama, through a rich well-cultivated district, with some mulberry-plantations on the way.

21st.—I had official business at Toyama which occupied me for the forenoon. Left a little after noon, and passing through the small seaports of Midzubashi and Namenkawa, arrived at Gwozu for the night.

22nd.—Left Uwozu in the morning, and, as the road next the sea-coast had been rendered impassable from the bridges having been carried away by the floods, passed round by the foot of the mountains, and across a finely-constructed bridge over the river at the gorge through which it issues from the mountains. The scenery here is very interesting. The road thus followed, passes through a well-cultivated district, where the usual crosses are raised. Arrived at Tomari at noon, and in the evening at Uta.

April 23rd to May 1st.—From Uta the road lay along the beach as in coming. Was detained by sickness from April 25th to May 1st at Kakizaki. Arrived in the afternoon of May 1st at Kashiwazaki.

May 2nd.—Kashiwazaki to Hiyohoji.

3rd.—Hiyohoji to the town of Yoita, the seat of a Chihauji. Passed by the petroleum wells near Hiyohoji.

4th.—Proceeded from Yoita to Nūgata by boat down the Shinangawa.

The following are the approximate distances in English miles between the chief points on the route:—

Nūgata to Kashiwazaki ..	54 miles
Kashiwazaki to Imamaehi ..	27 "
Imamaehi to Toyama ..	90 "
Toyama to Kanasawa ..	27 "
Kanasawa to Daishoji ..	34 "
Kanasawa to Nanaō ..	42 "
Nanaō to Toyama ..	35 "

XVIII.—A Visit to Fernando Noronha. By ALEXANDER RATTRAY, Esq., M.D., R.N.

FERNANDO NORONHA, situated in S. Lat. $3^{\circ} 50'$, and W. Long. $32^{\circ} 25'$, and about 194 miles north-east of Cape San Roque, the most eastern point of the Brazils, lies out of the usual track of ships, and is one of the seldom visited islands of the South-Atlantic. Hence it is so little known that the Admiralty chart, an imperfect one, chiefly from French authorities, is dated 1735. The visit of H.M.S. *Bristol*, a brief one of two days (August 22-3, 1871), was chiefly meant to add to our imperfect knowledge, especially of the anchorage, height of the principal peak, &c.*

The island is said to have been infested by Dutch pirates, from whom it was taken by the Brazilians and converted into a

* The result has been the issue of a new Admiralty chart, dated January 1st, 1872.

penal settlement. Reminiscences of the pirates however, are still to be found in the local names, e.g. *lanse des Forbans*, and in legends as to the existence of mysterious caves in the singularly-shaped and inaccessible peak.

The chief island of the group is about four miles long, and on an average one mile broad; it consists chiefly of an undulating plateau from 100 to 300 feet above the sea-level, sloping steeply towards sandy beaches or bays, or ending in bold bluffs or cliffs, but rising occasionally into what the inhabitants jocularly term "mountains," of which there are four or five, from 500 to 700 feet high. At the eastern end lie five or six small islets, chiefly rocky and almost unused. The general trend of the whole is about south-east and north-west.

The anchorage off the convict village, about the eastern third of the north-eastern side of the island, is open and easy of access; and large ships may anchor close to the Fort rock and the narrow sandy beach on which landing is usually effected. Rollers, common at Ascension and St. Helena, are here unknown, and light winds render the place at all times still more safe.

Brazilian men-of-war, and on an average from 10 to 12 whalers, visit the place annually to refit and procure supplies. A small steamer, chartered by government, carries stores, convicts and mails twice a month to and from Pernambuco, the nearest Brazilian port. With this exception and occasional brief calls like ours, the island is entirely cut off from the civilized world.

The convict village, termed the "city," is built principally on the slope rising steeply from the landing-place, and numbers about 1000 inhabitants. The chief part is a square, so called, formed by the Governor's residence, a small church, the prison, workshop and government stores; all stone-built, whitewashed buildings. From this three or four streets radiate up the hill or to the right; in one of which, fronting the sea, are several small badly-furnished stone-built stores. The detached houses or rather huts of the convicts are fragile wattle-built edifices, roughly and thinly mud-plastered, through which light and air find entrance in many places besides the badly fitting doors and windows. They are usually imperfectly partitioned—one side being the family dwelling, the other, smaller, being the store for beans or maize; behind is a small, often neglected garden. A few, better built and whitewashed, shew some signs of comfort, from which we may often judge of the taste, habits, occupation, and social standing of the occupier.

Commanding the village and anchorage, and built on the summit of a high rock, jutting well into the sea at one end of the landing-place, is the principal and only respectable part. Formerly there were eight forts in different parts of the island,

but now there are only four, with 32 guns in all, many old and rusty. Only one fort is used. At the further end of the bay rises the singular-looking peak, a needle-shaped, bald, inaccessible elevation, which towers 1014 feet into the air, and casts a long shadow on the adjacent slope, so as to form an admirable sun-dial.

The island is held by 150 soldiers and 6 officers, under a Governor. The soldiers, who guard the stores, though not specially the convicts, occupy the fort. The convicts are 1500 in number, chiefly Brazilians, negroes and half-castes, with a few Italians, a half-caste American and an Englishman. Sixty of the number are women. There are about 200 women in all, including female convicts and the wives and daughters of soldiers and male prisoners. Children raise the total island population to about 2000.

The chief crimes for which they have been banished are murder, embezzlement, coining, forgery, &c.; many of the women for poisoning or murdering their husbands. Of the 1500, one-third or 500, including the women, live and work in the village; the women employed in sewing, tailoring, &c., and the men, each at his own special trade. All have their allotted tasks. So many are told off daily for fishing, working in the government stores, in landing cargo, &c. Fishing is carried on in small catamarans. Able-bodied artificers must work in the workshop under *surveillance*; but the aged, the infirm and the crippled are privileged by being allowed to do their carpentering, shoemaking, &c. at home. The remaining 1000 are divided into 10 companies of a hundred each, who cultivate 10 plantations, situated in different parts of the island. Over the whole are 16 sergeants, of whom the sergeant-major alone is a free man; the remainder being "specials" i.e. well-behaved, or time-nearly-expired men. One superintends the women; four, the village men; and ten, the plantation companies. The sergeant-major oversees all. The convicts are mustered every evening, either in the square or at the plantations. On Sunday they must dress cleanly and attend church, to which two French Roman Catholic "*padres*" are attached; the music being by a convict instrumental and vocal choir.

Of the 500 who live in the village, 400 occupy the prison. The remaining 100 are women and married men. No women live in the prison—so called. This is merely a stone-built erection of a ground-floor, consisting of an open court-yard, around which is a long, rough-looking, comfortless, stone-floored room, along either side of which the closely-packed convicts sleep, eat, and keep their scanty and usually worthless stock of clothes, &c., on long wooden tables. At the further end

is a primitive dirty kitchen where they grind and cook their maize, &c. The only fettered man in the island was here: a large-boned, flabby, ungainly, scowling individual, evidently despised by some of his fellow-convicts for having murdered a man while asleep, thus proving himself "good for nothing," according to my informant and guide, an American half-caste, who with another man now on the island, had murdered eight Brazilians in a drunken brawl on shipboard at Rio. The workshop near the prison is a similar building, in which the artificers work, sheltered from the dew and rain.

As a rule the convicts live half of their "time" in the prison, after which they may dwell outside, and build their own house, cultivate their garden, &c., Government allotting each a certain portion of ground. If well-behaved, especially if married, this boon may be granted at an earlier period by application to the Governor. The married convict may insist on having his wife and children beside him. Marriages occur on the island; males marrying female convicts or their daughters. Puberty occurs early. As might be expected, morality is at a low ebb.

There are two schools, one for the children of officers and soldiers, the other for those of convicts; the teachers in both being male convicts. The children of convicts must remain on the island with their parents till twelve years old, after which girls may leave or remain. If they prefer to go, they are sent, at Government expense, to a sewing society or hospital at Pernambuco. Boys must go at 12, and are sent to the high school there to train for soldiers. As there are no boats on the island, except catamarans, escape to the distant coast is scarcely possible, and hence seldom attempted. Even if managed, the escaped prisoner is almost certain to be recognised and caught on reaching Brazil.

Each has an allotted portion of work to perform daily, whether of hoeing, manioc, maize, or seed planting and gathering, &c. But as the Brazilian standard of work is not high, they are not overworked; and, like slaves, convicts will seldom do more than they are forced to. The amount of labour necessarily depends much on the season, state of the soil, crops, &c.; and its duration varies from 10 A.M. to 2, 4 or 6 P.M.

Various punishments are inflicted on the lazy or refractory. For example, solitary confinement in the prison cell. The lash is pretty often and freely used, in the square, when all must be present. For laziness they get from 50 to 100, but sometimes from 150 to 300 are given at once. Very lately 1500 were administered at one whipping to a Brazilian convict for stabbing his wife; the man being now in hospital to recover. There are

no capital punishments in the Brazils. But the punishment most dreaded is banishment to Rats Islet, for six months or a year, where they live a Robinson Crusoe life, and may starve unless they fish and cultivate the soil.

Instead of being clothed and fed by Government, they are allowed about 1*l.* per month, with which they purchase food and necessaries, and, when they can, tobacco and other luxuries.

All the farm produce and manufactured articles are claimed by Government; and the labourers get nothing beyond a few heads of maize after their day's work. Their clothing is coarse but strong, and they have no distinctive dress. Their usual food, purchased either at the Government or general stores, consists of maize, manioc, black and white beans, all island produce, and jerked beef from the Brazils. Food and necessaries are on the whole dear; and their scanty pay makes luxuries like tea, coffee, &c., for which they are charged enormously, for the most part beyond their reach.

The private "general stores" are small dirty dens of which the stock in trade might apparently be purchased in England for five or ten pounds. They belong to privileged convicts, some of whom are wealthy and do not scruple to still further enrich themselves by preying on their poorer fellow-prisoners. One, said to be worth 300,000 dollars, was formerly a bank cashier, and banished for twenty years for embezzlement. Some female convicts, transported for husband poisoning, are also well to do. Neither the wealth nor possessions of the Brazilian convict are forfeit to the crown. Nor is Brazilian society less lenient, inasmuch as the time-expired convict may soon, especially if wealthy, regain his old social position. Here as elsewhere, however, banishment does not always prove an effectual cure for crime. A detective is now on the island to ascertain from whence certain counterfeit coins are emanating. He must be an adept who contrives to carry on secret coining in such adverse circumstances, and pass base money in such a community.

Some of the prisoners for life, who have been long here, and have grown old in the place, like it, and appear contented—if not happy. On the whole there does not appear to be much discontent. Many of the prisoners would not be taken for other than well-conducted labourers, farm-servants, or artisans. But others have a demoralized, self-conscious hang-dog look, an unprepossessing countenance, a low-typed cranial development, and the lazy, dirty, slovenly habits, which long familiarity with crime often begets.

Their amusements are few. A theatre in which they themselves performed, was lately burnt down. They have an instrumental band, which also forms the church choir. In the evenings

they assemble for gossip in the public square. Books and literature appear at a discount.

The surface rock of the group is a conglomerate of reddish clay—enclosing boulders of basalt, and occasionally penetrated by huge masses of basalt and granite, which form the peak and other hills, headlands, cliffs and rocks. There are no known minerals.

The deep, reddish, clayey soil, parched and cracked during the dry season, but, like the roads, soft and muddy during the rainy season, is highly fertile. Almost the entire island is under cultivation. During the wet season, which is the chief time for planting, the surface is of a vivid green from the profuseness of the vegetation. And so fertile is the soil, that crops of maize, bean, manioc, &c., are always in progress, three and often four being obtained during the year. Farm implements are very primitive; the plough is unknown, and a hoe, which only turns up the surface soil, alone used. Clumsy bullock carts, with wooden axles, and heavy solid wooden wheels, draw the farm produce lazily to the store.

The chief vegetable productions are maize, manioc, beans and castor-oil, which are grown in alternate rows of maize and manioc, or maize and beans, or manioc and castor-oil plant. Maize is the chief production, and the entire crop is consumed on the island. A little fine manioc is made for the officers; but most of the root is sent to Pernambuco for manufacture and re-impotation in a coarse, dark form for sale to the convicts. The plant appears to be the sweet cassava (*Janipha Læflingii*), the root being smooth, brown, spindle-shaped, and about 6 oz. in weight. From the castor-oil bean, both the medicinal oil, and a coarse, bad-smelling lamp-oil are made on the island. The small black and brown "macass" bean is the produce of a leguminous shrub named Tajung. Sugar is grown in small quantities, but, like the island water, its juice is brackish. Cotton, very white but small in the pod, is grown in trifling quantity for exportation, and might be more extensively cultivated. Rice also might be profitably introduced. The Cajutree, yielding a large almond-shaped plum-like fruit, and the amendon fruit, red and plum-like with a large stone, are common. There is a plantation of coco-nut trees, another of banana and fig trees, all yielding good fruit. Mammee apples, sweet lemons, a few oranges, and also water and marsh melons, pumpkins, sweet potatoes, and a small variety of tamarind are also grown. In one spot in the south-west part of the island, locally termed "son-oest," all kinds of plants and fruits may be grown. By introducing modern farm implements and other improvements, these plantations might unquestionably, under enlightened,

systematic and energetic management, be both better cultivated and more productive than now.

There are about 160 or 170 horses and 500 cows on the island, belonging chiefly to the sergeants. Milk is abundant, and usually bought by the convicts. Cattle are occasionally killed for the soldiers. Except pigs and dogs, no other larger quadrupeds exist than rats and mice, both common in the fields. Fowls are plentiful. Our sportsmen bagged many small doves, but suffered from a troublesome stinging-nettle, and from the effects of a tree whose leaf or stem sap caused much pain and swelling in the part on which it accidentally dropped. Lizards and wasps abound in the fields, and also a black burrowing cricket (*gryllus*). The water-birds are: wideawakes, gannets, tern boobies, noddies, boatswain birds, &c. Fish are abundant, large and good.

The geographical position of Fernando Noronha is just where the Brazilian current diverges southward from the main equatorial ocean current, which here begins to take a north-west course along the shores of Maranhão. It in fact lies at the apex of, and has doubtless contributed to form, the pointed bank which juts out from Cape San Roque and the adjacent coasts to the north-west and southward, by which the great equatorial current is split. It further lies in a debatable region as regards the prevailing winds of the South Atlantic, being neither fully in the south-east trades, nor entirely out of them, nor even at some seasons entirely clear of the southern prolongation Brazil-ward of the north-west trades. When more fully investigated, it will probably be found that its peculiar situation makes its climate and meteorology singular and exceptional.

The seasons are the wet and the dry; the former lasting over March, April, May, June, and part of July, during which it rains heavily night and day. The dry season prevails during the remainder of the year, the sun being very hot in sheltered places, but tempered in the open by the breeze. The island lies near the isotherm of 80° F., and the thermal equator is here 4° to the north of the physical equator, i.e. about 7° to the north of Fernando Noronha. It is thus to the south of the equatorial belt of calms, even when this is farthest south, which accounts for the comparative coolness of its climate. The temperature at the anchorage during our visit, ranged from 77° F. to 79° F.; that of the sea being 78° F. and 79° F., the relative humidity of the air, as shown by the wet and dry bulbs, being 80°.

The rain-bringing winds come from the south and south-west. During our stay S.E. and E.S.E. winds prevailed, and are probably the chief winds of the island. But north and north-eastern winds are also said to occur. Of what nature are these winds? May not the north and north-east ones be merely a southern

prolongation during certain seasons of the trades of the northern hemisphere. Our Admiralty charts* show that the latter during January, February and March extend as far north as the north-east coast of Brazil to within 120 miles of Cape San Roque, and their moveable limit is not yet very certain, far less fixed. The rainy south and south-west winds may be regarded as a modification of the south-east trade. The rainy season of Noronha closely corresponds with that of the adjacent coast to the south of Cape San Roque; and the winds of the one, like those of the other, may also be partially periodic.

Though tropical, the climate is essentially fine and healthy, as shown by the appearance of the inhabitants. Here, as at Ascension, it is not so much those employed in the sun who suffer from the heat or deteriorate in health, as those who work indoors, especially at sedentary occupations. The most prevalent diseases are diarrhoea and occasionally dysentery, both doubtless predisposed to by the heat, but most probably excited in most cases by the muddy, brackish water, not over-abundant on the island, and only got near the beach. The average daily number sick usually ranges from 20 to 30. Malingering is not uncommon. The military surgeon, the only medical man on the island, has a small hospital for soldiers and convicts; the latter while under treatment being fed at Government expense.

The scenery, especially of some of the bays, is by no means unpicturesque. On the whole the island is well worth a visit, and would especially repay the curiosity of the naturalist.

XIX.—*Papers connected with the Upper Oxus Regions.* By Colonel H. YULE, C.B.

1. *Pandit Manphul's Report on Badakhshan.*
2. *Mirshi Faiz Bakhsh's Journey from Peshawar via Kabul, Badakhshan, and Pamir to Kashgar.*
3. *Remarks by the Present Writer on the Origin of some of the Erroneous or Apocryphal Topography which till quite recently appeared in many Maps of the Upper Oxus Regions.*

As far as I can learn, Pandit Manphul's Report, written in 1867, has not hitherto been printed, nor am I aware whether it has ever reached the India Office. It was sent to me by the Pandit himself, as a comprehensive reply to various questions regarding Badakhshan, which I had addressed to him through my friend Colonel R. Maclean, R.E., when occupied with Marco Polo.

* Atlantic Ocean Pilot Chart.



No. 2. Larger Extract from the CHINESE MAP The Shade shows the deranged portion adjusted. Longitudes *W. from Peking.*



No. 1 Extract from the CHINESE MAP as it is The Shade indicates the portion in which derangement has occurred. Longitudes *W. from Peking.*



No. 3. Map according to modern data, showing the places represented in the CHINESE MAP Longitudes *East from Greenwich.*



The Report closes with the words, "To be continued." I fear, however, that this is only tantalizing. Shortly after the paper was sent to Europe, Pandit Manphul left Lahore for his native state, Bhikanir, and there, I understand, he has taken office as minister of the Raja. It is stated that since his departure from the Panjáb it has not been found possible to get answers from him to letters. This is confirmed by my own experience.

The Pandit's Report was read at the meeting of the British Association in 1871, and I have long intended to forward it to the Society for publication. But I desired to accompany it by a map on a large scale. This still remains incomplete, however,* and it seems to me that the publication of the Report should not be longer delayed. It certainly contains some new and interesting circumstances and facts about Badakhshán and its topography. I have added a few notes where it seemed desirable. Most of the notes are however the Pandit's own.

Faiz Bakhsh's Report has been printed, but not published. He was sent on his journey by Mr. Douglas Forsyth, C.B., at the time when that gentleman went on a mission to the Atalik Gházi of Káshgar, and he overtook Mr. Forsyth on his return march from Yarkand. Mr. Forsyth was good enough to give me a copy of the document last year, and I obtained his leave to send it to the Society for publication, with the necessary corrections. These, owing undoubtedly to Mr. Forsyth's illness after the journey, have been very numerous; and, indeed, without very careful correction it would not have been profitable to print the itinerary. Some anomalous names, unknown to me, must still remain doubtful, and these I have distinguished by italics.† But I trust that the doubtful names are now comparatively few, and I am quite satisfied that the Report is worth publication by the Society. It contains a great deal of new topography, which is by no means valueless, though, of course, the absence of actual survey detracts from its value. I imagine that it was written in English by the Múnshi, as in various parts he refers to Ptolemy, Marco Polo, and so forth. But as these references are of a very crude and useless kind, I have omitted them, with a few other digressions which contained nothing useful.

The object of my own short paper is to show how the perversion or misplacement of certain localities and names, such as Bolor, Voohan, Karehn, Ergu, Dairini, &c., which figure in the pseudo-geography of the Russian Archives, probably originated.

* The map in question formed the basis of the reduced one published in the new edition of 'Wood's Journey' (1872).

† The italics have this sense only in Faiz Bakhsh's paper.

1. *Badakhshān and the Countries around it.* By Pandit Manphūl, c.s.i.

Badakhshān is bounded on the north by the *Kolāb* and *Darwāz* countries, or rather by the River Oxus; south, by the *Hindu Kūsh* range; east, by the *Pamer Steppes* and part of the *Chitral* country; west, by the *Kataghan** country, whose capital is *Kunduz*.

Its length from *Wakhān* in the east to *Tālikān* in the west is about 200 miles (16 stages), and its breadth from *Yangkild* in the north to the *Hindu Kush* range about 150 miles (10 days' journey).

This mountainous country—abounding in mineral, vegetable, and animal, resources, interspersed with romantic dales, and extensive, though narrow, rich, and fertile valleys, producing the choicest kinds of grains and fruits, with hills covered with the softest grass, affording most nourishing pasture to the different useful quadrupeds that thrive so well in this region, viz. the *Yāk*, domesticated and wild; † cows and oxen; the shawl-wool goat; the *Asl-tūs* ‡ producing goat-deer; the fat-tailed sheep; a handsome, hardy breed of ponies; and the two-humped camel (the *Bactrian*); § and possessing a climate which in point of salubrity is perhaps inferior to none in the world—is one of the best fields for the researches of the geologist, the botanist, and the naturalist.||

But its central position, between India and Afghanistan on the one hand, and Eastern Turkistán, Khokand, Bukhāra, and the Turkoman Steppes on the other, the comparatively peaceable character of its ruler and people, and the facilities which it is calculated to afford to the furtherance of mutual intercourse between these countries, are objects of far greater importance, deserving the attention of the politician.

* [This is properly the name of the *Uzleg* clan, to which the local chiefs of *Kunduz* for a century or more have belonged.—Y.]

† The *Yak* and the two-humped camel are confined to the more mountainous and colder portion of *Badakhshān* in the east, viz. the districts of *Rūshān*, *Shigh-nān*, *Jahkaahn*, *Wakhān*, and *Zebāk*; they also abound in the *Pamer Steppes* and *Sirīkol*. The Arabian, or one-humped camel exists in the western portion of *Badakhshān*.

‡ *Asl-tūs*, also called *Marghulān*, wool of the goat-deer, which is much warmer and softer than the common shawl-wool. The goat-deer, called *Rang*, *Kushkār*, *Takkī*, and *Mash*, is found on the *Pamer Steppes* and in *Chitral* also. [The name *Kooshgar*, *Kutchgar*, is applied by *Burnes* and *Wood* to the *Orin Poli* of *Pamer*, and also by *Faiz Bakhah*; but see *Blyth* in *Journ. As. Soc. Bengal*, vol. x. p. 858. It is difficult to say what species the Pandit here speaks of. It is the *Ibex* or *Skyin* of *Tibet* which furnishes the superfine wool called *Asl-tūs* in *Kashmir*.—Y.]

§ The wild beasts of *Badakhshān* are wolf, bear, tiger, jackal, hog, fox, *Dalla* (ermine), *Hinduk* (?), and deer. The birds are partridge (*Kabak*), pigeon, stork, cock, crow, nightingale, *Zigha* (a crested bird), duck, different kinds of hawk and falcon, quail, *Ushdab* (eagle), *Kalmargh* and *Karpas* (species of vulture), *Jal lark*, &c.

|| The spring (*Bahār*, March, April, May) is the rainy season in *Badakhshān*. The summer (*Tabistān*, June, July, August) is generally marked by a clear sky and regular sunshine; autumn (*Tirāmāh*, 15th September to 15th December), clear sky, excepting the interval of the equinoctial rains; winter (*Zamīstān*, 15th December to 15th March), drizzling and snowing. The snowfall in the western valleys of *Badakhshān* does not ordinarily exceed one foot; in the eastern portion it is much heavier, but none of the routes throughout the province are ever closed on account of snow, not even the road to *Yarkand* through the *Pamer Steppes*. The roads to *Kābul* and *Chitral*, however, over the *Hindu Kush* range, become impracticable to mounted travellers and laden animals, in consequence of the closing of the *Khartezd*, the *Nukadn*, and the *Dardh* passes leading into *Chitral*, and the *Hindu Kush* Pass into *Kābul*, in the months of December, January, February, and the beginning of March. Foot passengers can safely travel over the passes between *Badakhshān* and *Chitral*, especially the *Khartezd*.

Its principal Political Divisions are:—

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|--|--|
| 1. <i>Faizābād</i> and <i>Jirm</i> , in the centre, under the immediate government of the Mir Jahāndār Shāh, present King of Badakhshān. | } All dependencies of Badakhshān, held by the relations of the Mir, or by hereditary rulers, on a feudal tenure, conditional on fidelity and military service in time of need; the holders possessing supreme authority in their respective territories, and paying little or no tribute to the paramount power. These subordinate rulers are also called <i>Mirs</i> , but for facility of reference they will be styled <i>Sub-Mirs</i> in this narrative. |
| 2. <i>Daraim</i> , in the middle | |
| 3. <i>Shahr-i-buzurg</i> , do. | |
| 4. <i>Gumbuz</i> , do. | |
| 5. <i>Farakhār</i> , in the west | |
| 6. <i>Kishm</i> , do. | |
| 7. <i>Rustāk</i> , do. | |
| 8. <i>Rushdn</i> , in the east | |
| 9. <i>Shighdn</i> , do. | |
| 10. <i>Ishkādsham</i> , do. | |
| 11. <i>Wakhān</i> , do. | |
| 12. <i>Zebāk</i> , in the south-east | |
| 13. <i>Minjān</i> , do. | |
| 14. <i>Ridgh</i> , in the north | |
| 15. <i>Daung</i> , do. | |
| 16. <i>Asidābā</i> , do. | |

1st Division.—FAIZĀBĀD.

1st District.—Faizābād, under Mir Jahāndār Shāh.

Principal Subdivisions.—1. *Faizābād*.

2. *Yūftāl*.

3. *Argū*.

4. *Shewā*.

Principal town—Faizābād.

Principal river—Kokcha. This river, which rises in the slopes of the Hindu Kush range above *Kurān*, runs through the whole breadth of the province in a north-westerly direction, and passing through the districts of *Jirm* and *Faizābād*, and along the south-westerly boundary of the district of *Rustāk*, falls into the Oxus 2 miles below *Khojughār*, a village in the *Hazrat Inām* district of Kunduz. It freezes in its upper course in winter, when it is also fordable. Its principal tributaries are the *Varōj* and the *Zardo*, rising in the *Zebāk* and *Ishkādsham* districts, and the *Daraim*, *Teshkdn*, and *Mushhah*, in the *Kishm* district. *Yūftāl* and *Shewā* are two fertile and thickly populated hilly tracts; the former inhabited by Tājiks, who raised an ancestor of the present Mir to the throne of Badakhshān, and the latter by the Turks of the *Yakka-Moghal* tribe, who are equally devotedly attached to the reigning dynasty. *Yūftāl* is separated from the city of Faizābād by a low hill-range.

Argū and *Shewā* are two extensive plateaus. The one (*Argū*) separated from the lower plain of Faizābād by an easy pass, the *Kotal Roshkdn*, is about 15 miles in length, and about 8 miles in breadth. It is covered with cultivation, belonging to the crown and the nobility. The other (*Shewā*), extending in an easterly direction from Faizābād for about 20 *kos*, and lying in a much cooler region, is the best and largest pasture-ground in Badakhshān. It contains a large lake called *Sir-i-Kul*, about 20 miles in circumference.

The *Dasht-i-Khamchān*, another plateau, once contained a large city called *Khamchān*, whence Mahmūd of Ghazni took his favourite slave Ayāz, while travelling, as tradition has it, in the guise of a merchant.*

Faizābād is a small unwall'd town on the right bank of the River Kokcha,

* [A plain called *Khamchān*, probably that here spoken of, is indicated by Faiz Bakhsh immediately to the north of the Pass of Roshkdn, west of Faizābād.—Y.]

in the valley of that river, which narrows here to a breadth of not more than a mile, containing about 400 mud-built houses; * a bazar,† consisting of a Sarai, and about 100 shops; four *madarasa's* (schools)‡ supported by the government and people; a *khiābān* or promenade, in which the Mir often joins his chiefs in the *goi-bāzi*.§ The city was founded in the middle of the seventeenth century by Yārbeg, first Mir of the present dynasty.|| The Mir's residence, a square mud-fort, stands on the right bank of the river, at the north-west corner of the town. The old fort, called the *Zagharchi*, on an eminence, overlooking the town, is now in ruins.¶ The tomb of Khwāja Mārūf Karkī, a celebrated Mohamedan saint, who lived in the immediate vicinity, and the building known as the *Khirkat-i-Sharīf* in the town, are places of great religious notoriety. The latter place was once the depository of the relics of the Prophet Muhammad, which were carried away from Badakhshān by Shah Wali Khān, Vazīr of Ahmad Shāh Abdālī, King of Afghānistān, who had been sent there by his master in A.D. 1765, with a large force, for the purpose.

The Mir's Park, called the *Dasht-i-kury*, about 2 miles to the north-west of the town, is a beautiful plateau, commanding a fine view of the Kokecha valley.

Chattu, a village on the left bank, about 3 miles to the east of Faizābād, contains the largest and best gardens of fruit and timber trees and flower plants in the province, belonging to the Mir and his chiefs.

Degechān (iron cans), boots, shoes, buskins, and the *Ilacha*,** are largely manufactured for home consumption, as well as for exportation to Kunduz and Chitral. The cans are of cast-iron, after the Russian style.

2nd District, JINX; (also) under the immediate government of Mir Jahāndār Shāh.

* The houses and shops throughout Turkistān are generally built of mud and stones.

† All bazars in Badakhshān, as well as in Kunduz and Kelāb, are opened only on market-days fixed for each bazar, when the people from the surrounding countries assemble to exchange goods, mostly by barter. Monday and Wednesday are the market-days for Faizābād. [From this circumstance a number of the villages in Turkistān appear to take their usual names, e.g. *Yak-hambih Bāzār*, *Do-hambih Bāzār*, i.e. First-day or Sunday market, Second-day or Monday market, &c.—Y.]

‡ Two of these were built by the former Mirs of Badakhshān, the third has recently been erected by the present Mir near the Fort; and the fourth was built by Sa'id Diwānbegi, father of Muhammad Nabī Mukhtār, prime minister of Mir Jahāndār Shāh.

§ Also called *chaugān bāzi*, a game at trap-ball [rather *hockey*] played on horseback, requiring great knack besides endurance. [This once famous game, recently introduced in England under the Tibetan name of *Polo*, is long quite extinct in the plains of Hindustān, but it survives in the Tibetan states of *Balti* and *Ladak* at one end of India, as it does in the Indo-Chinese state of *Manipūr* at the other. It was naturalised at the Byzantine court under its native name as *τεκεσιζευ*, and in Provence as *chicumer*, whence there can be little doubt we have the word *chicanery*, &c. And the undoubted fact that the Provençal *chicane* came from one Persian name of the game (*chaugān*) renders it possible that the Scotch *golf* came from the other name (*gōi* or *gāri*, as it is also pronounced).—Y.]

|| [The Pandit almost certainly means the *eighteenth* century, for in another communication he speaks of the dynasty as having commenced 125 years ago.—Y.]

¶ [This old fort, according to Wood (251) stands on the left bank.—Y.]

** A strong striped cotton and silk-cotton cloth, made in pieces each measuring 12 yards by 11 inches, used in making *jāmā* or cloaks. [Vámbery's 'Chagatai Vocabulary' has "الاجة *alaja*—a narrow woven stuff of Central Asia".]

- Subdivisions—1. *Jirm*.
 2. *Khash*.
 3. *Zardeo*.
 4. *Sarghalán*.
 5. *Vardoj*.
 6. *Kurán*.
 7. *Anjumdán*.
 8. *Parydn*.

City or town—*Jirm*.

Principal rivers—*Kokeha*, *Vardoj*, and *Zardeo*.

Jirm is the largest division in Badakhshán, consisting of the rich valleys of the *Kokeha*, the *Khash*, the *Zardeo*, the *Vardoj*,* the *Sarghalán*, the *Kurán*, the *Anjumdán*, and the *Paridn*. The three last are on the immediate slopes of the Hindu Kush range, and touch upon the frontier of the *Panjshahr* district of Kábul. The valleys of the *Kokeha* and the *Kurán*, as far down as the *Dasht-i-Baháruk*,† with their mountains, form the famous tract “*Yam-gán*,” or “*Hamah-Kán*” (“All Mines”), in which lie most of the mines of Badakhshán, viz. those of lapis-lazuli, lead, alum, sal-ammoniac, sulphur, ochre (*zdyh*),‡ copper, &c. The *Yamgán* was for centuries an object of eager prey to the kings of Turkistán, and the early Chaghatai emperors of Delhi.

The Ruby Mines are situated in *Ishkdásham*, bordering on *Shighnán*. The Iron mines now worked are at *Arghanjkhudh* in the *Faizábád* district, one day's journey to the north-west of the *Dasht-i-Baháruk*. Mines of green and red sulphur, alum, and *zdyh*, are also found in and about *Gogirdasht* in *Sanglich*, a subdivision of *Zebák*, through which lies part of the caravan-route from Badakhshán to India by *Chitral*.

The Salt Mines are at *Akbáldk*, near the *Lattaband* pass in the district of *Farakhár*, and at *Darúnd* in the *Karligh* or *Kullakh* tract.

The Ruby and Lapis-lazuli Mines are under the direct management of the *Mír*'s government. The other mines are under the chiefs or *Akskás*, who work them through the people living near them.

The Ruby Mines have not been worked for the last twenty years and upwards. They were then given up in consequence of the labour spent on them not having been sufficiently rewarded; whether the mines had been exhausted, or whether the workers were unskilful, or managed to steal the more precious stones, is not certain. The present *Mír*, who had one of the mines worked last year (A.D. 1866), at my request, made over to me some of the best specimens brought to him. They are not the best of their kinds, unless the one encased in a nodule turn out to be so. The *Mír*, depreciating the skill of the present workers, who are natives of the country, and, according to an established usage, labour for nothing, is anxious to secure the services

* Amir Taimúr was, on his second invasion of Badakhshán, in the year 768 A.H. (A.D. 1366-67), reduced to great straits in this valley. [This seems to allude to the events described in ‘*Pétis de la Croix*,’ i. 168-170. He gives the year as 1377.—Y.]

† The *Dasht-i-Baháruk*, also called *Dasht-i-Farikh*, is one of the most extensive fertile plains in Badakhshán, into which the valleys of the *Kokeha*, the *Sarghalán*, the *Zardeo*, and the *Vardoj* open out, and in which all these streams unite. In former times it contained a large city, which was once the capital of Badakhshán. It is now the summer residence of the *Mír*. It is studded with a number of picturesque villages, the principal of which is *Khairábk*. The caravan route from India to Faizábád by *Chitral* passes through this plain from south-east to north-west.

‡ [*Zdyh* or *Zij* the dictionaries interpret as “copperas; vitriol.” Sulphate of copper?]

of competent miners, but his want of funds, and fear of the cupidity of the Afghán government, on which he is dependent, have hitherto deterred him from taking active measures in this direction. It is believed that the mines are still stealthily worked by the people living near them, with, or without the countenance and connivance of the servants of the Mir charged with their management. The mines are known to have yielded rubies of six different colours, viz. red, green, white, yellow, violet, and rosy. The specimens with me are white, violet, and rosy.

The ruby (*lil*) has given Badakhshán a lasting celebrity in the world of Oriental poetry.

The *Solanmakhi** also comes out of the Ruby Mines.

The Lapis-lazuli Mines in *Kurán* are worked in winter only, it being unsafe in summer to enter them for fear of venomous reptiles that then rush out. For some reason or other the stone that has for several years past found its way to the Mir's treasury is of a very inferior quality, destitute of both colour and purity. The quantity annually brought to the Mir is between 30 and 40 *puds*,† sometimes 60 *puds*, a portion only of which is at all saleable, and this is forced upon the Mir's creditors at an arbitrary price by his unscrupulous Diwán-begi.‡ The quantity thus sold last year was 12 *puds*, at the rate of 100 Muhammadsháhi rupees per *pud*.§ The superior kind of lapis-lazuli, which is of the deepest blue colour, with streaks of gold in it, sells at Bukhárá at from 30 to 60 *tillas* (120 to 140 rupees, Anglo-Indian coin) per *pud*. Thence it is exported to Russia, where it is used for painting porcelain, &c. In India it has to a great extent been superseded by the European blue dye. In Kashmír it is used in decorating manuscript books and painting *papier-mâché* articles. The Chinese much prize it as a material in the manufacture of superior porcelain.

Lead.—A mine of the best description of lead has been discovered in the *Yamgdán* last year (1866); and the Mir is willing to sell it at a price that could answer if it were taken to India. Some of the quantity excavated last year was purchased by a Bájaur merchant at about 5 *seers* per Muhammadsháhi rupee.

Sulphur of five different colours, red, white, blue, yellow, and green, is found in the mines of *Yamgdán* and *Sanglich*.

Iron.—Common iron is found in *Arganjkhvath* and *Yamgdán*. A superior description called *kurch*, of which knives and swords are made, is found in *Rushán*.

Rock-salt.—The salt-mines of Badakhshán supply salt not only to the whole of the country, but to the people of Kunduz and Chitrál also. It is ash-coloured. The Mir of Farakhár, in whose district the Akbúlák mine is situated, levies a small tax upon all miners.

Sul Ammoniac, red, white, and yellow, is found in *Kurán*.

Copper.—The mines, in *Yamgdán* and *Daung*, are not worked.

The town of *Jirm*, the ancient *Golán*, about 20 miles to the south-east of the town of Faizábád, on the left bank of the Kokchá River, is the seat of local government. It is full of mulberry and apricot trees. The governor is an emancipated slave, known by the title of Mehrám-Diwánbegi (confidential attendant), that he formerly held under the late Mir. He is one of the ablest statesmen in Badakhshán. The mud-fort of *Jirm*, surrounded by a ditch, is the largest and best constructed in the country.

* [Query, corundum?]

† A *pud* is equal to 17½ (Indian government, *seers* of 80 *tolas* each (about 36 lbs. English).

‡ An officer in charge of the Mir's household.

§ A Muhammadsháhi rupee is equal to 19 *annas* at Peshawur (about 2s. 4d.).

¶ The gold streaks are much prized for medicinal purposes, but not for ultra-

The celebrated shrine of Sháh Násir Khusró, a Muhammadan saint and philosopher of note, who lived in the tenth century of Christ, is situated in a romantic part of the valley of the Kokchá. It is largely resorted to by Muhammadan *fakirs* from India and Khurásán.

Division RUSTÁK ; held by Sub-Mír Ismáíl Khán, first cousin of the Mír.

- Subdivisions—1. *Rusták*.
2. *Cha-áb*.
3. *Yangkilá*.

River.—The River *Kokchá*.

This district, next in importance to Faizálád-Jirm, lies to the north-west of Faizábád, bordering, on the west, on the *Tálikán* and *Hazrat-Imám* districts of Kunduz.

- „ „ east, on *Pusákú*, alias *Shahr-i-buzurg*, and *Faizábád*.
„ „ south, on *Kishm* and *Faizábád*.
„ „ north, on *Koláb*.

The *Kizíl-duráh*, a long and rather difficult pass, lies between Rusták and Faizábád, and by it the caravan-route between the two cities passes. It is practicable for laden animals.

The town of *Rusták*, in an extensive plain, the residence of the Sub-Mír, is the most important commercial market in Badakhshán, owing to its central position, between the *Hindú Kush* Pass, *Tashkurgán*, and *Kunduz* on the one hand, and *Faizábád* and *Koláb* on the other. The *Tájiks* of *Chárahár*, a place of some commercial note between Kábul and the Hindú Kush, and the Hindú merchants of Kunduz, chiefly supply the market with the merchandise of India.

Cha-áb, a subdivision of Rusták, bordering for about 8 miles on the left bank of the River Oxus, is the only tract throughout Turkistán in which the inhabitants depend for their drinking-water on wells only. Hence its name *Cha-áb* ("Well-water"). It is one of the best grain-producing plains in Badakhshán. Possessing a dry salubrious climate, it gives birth to a race of men that surpass all others in the country, excepting those of *Wágh*, not only in physical development and bodily strength, but in mental faculties also. The best Arabic scholars and most intelligent and accomplished courtiers in Badakhshán are the *Cha-ábís*.

Division KISHM ; held by the Sub-Mír Sulémán Sháh.

- Subdivisions—1. *Kishm*.
2. *Mashhad*.
3. *Varsach*.
4. *Teshkán*.
5. The *Kullagh* or *Kurligh* Tract.

Principal Towns.—*Kishm* and *Mashhad*.

Rivers.—*Mashhad* and *Teshkán*, two small streams fordable throughout the year. These rivers, rising in the Jirm hills, fall into the River *Kokchá* below *Gumbaz*.

This district, which borders on the west the *Tálikán* district of Kunduz ; east, *Daraim* and *Jirm* ; north, *Rusták* ; south, *Farakhár* ; is the warmest of all others in Badakhshán, and its fruits grow in abundance, ripening a month earlier than those of Faizábád, and two months earlier than those of Jirm.

Varasch, *Kishm*, and *Mashhad* are situated in a long, narrow valley, one of the richest in the country, both in grains and in fruits, extending from the *Garmá Kotál* in the south-east to below *Asiábd*, where the River *Mashhad*, which runs through the length of the valley, joins the River *Kokchá*.

Kishm, a large village on the right bank of the River *Mashhad*, where *Amir Taimur* twice encamped on his invasions of *Badakhshán*, is now the seat of the provincial government and residence of the Sub-Mir *Sulemán Sháh*, who has of late years considerably improved it, having built a market, a *madarasa* (school), and a mosque, and laid out a large garden in it. *Sardár Aslam Khán*, a *Bárákzai* chief, formerly in the service of the *Sardár* (afterwards *Amir*) *Afzal Khán* in *Balkh*, now a guest of the Sub-Mir, has constructed a house and a garden there, in the *Afghán* style.*

Mashhad is the largest town in the district, also situated on the right bank of the *Mashhad* River, containing about 150 houses, and an old mud-fort, which was at times occupied by Prince (afterwards Emperor) *Humáyún*, during his Vice-royalty of *Badakhshán* under his father *Báber*, between the years (A.D.) 1520 and 1527.

This town, which lies in the caravan-route between *Kunduz* and *Faizábád*, in the most fertile part of the *Mashhad* Valley, has been deprived of several families to add to the population of the rising station of *Kishm*, which lies about 4 miles higher up the valley.

Teshkán, a long, narrow defile, parallel to that of the *Mashhad*, contains the principal villages of *Teshkán* and *Muzaffari*. In the vicinity of the latter place, which was the residence of a branch of the ancient dynasty of *Badakhshán*, once stood a fort called *Kilá Zafar* upon a craggy mountain ridge. It was a stronghold of the ancient kings of *Badakhshán*, and the principal seat of government in the time of Prince *Humáyún*.

The Fort of *Kalagán*, near *Kotal Lataband*, a mountain pass near the range that divides the territory of *Kunduz* from that of *Badakhshán*, has a garrison of 200 men to guard the frontier against the *Kunduz* chief, and the exiled ex-Mirs of *Badakhshán*, who reside in that country.

There is a *Báj-Kháneh* or custom-house at this place, where duties are levied for the Mir of *Kishm* on all goods passing between the above two countries.

The districts of *Gumbaz* and *Asiábd*, comprising the lower part of the Valley of *Mashhad*, are small fiefs held by the Sub-Mirs *Mirza Ján* and *Muhammad Nabi*, members of the present reigning dynasty.† An old dilapidated domed building ("*Gumbaz*") containing a number of tombs of some of the early martyrs of Islamism, which has lately been dug out of a mound of earth by *Mir Mirzá Ján*, gives name to the former place. These martyrs (*Shahíd*) are supposed to have fallen on the spot now occupied by the town of *Mashhad*, whence its name, meaning "Place of martyrdom."‡

Faizábád, *Jirm*, *Rusták*, *Rágh*, *Kishm*, *Daraim*, and *Shahr-i-Buzurg*, are the most populous and fertile districts. Both their hills and their plains are productive. The former, mostly composed of earth, having very little of

* *Aslam Khán* lived at *Pesháwar* for some twelve years, under *Sardár Sultán Muhammad Khán Bárákzai*. He is a very intelligent, well-informed, gentlemanly person, well-disposed towards the British Government.

† Both these Sub-Mirs are well versed in the history of *Turkistán*. The second is one of the best Arabic and Persian scholars in *Badakhshán*.

‡ [I understand the small fief *Asiába* ("Water-mill"), mentioned here, to be entirely distinct from the *Division* of the same name which the *Pandit* has entered last in the general list of *Divisions*, as in the North of *Badakhshán*. But as there is no other mention of the latter, there may be some doubt.—Y.]

rocky substance in them, produce *salmi** crops of grain, besides a variety of grasses and useful indigenous plants, drugs floral† and medicinal,‡ and fruit-trees.§ The latter, irrigated by the Kokehá and numerous other hill-streams and torrents, yield plenteous crops of wheat, rice,|| *nakhául* [*Cicer arietinum* or grain]¶, mung, called *másh* by the Badakhshis [*Phaseolus mungo*], *arzan* (a millet), *lasuk-mujik* (another millet), *fitak* (a kind of pulse), *bákla* [beans],** cotton, linseed (*alsi*, called *zaghír* by the Badakhshis),†† poppy, sesamum. *Joari* and *bajri* [*Holcus sorghum* and *Panicum spicatum*] are grown to a very limited extent.

These districts contain rich gardens of fruit and timber trees, vegetables, and flowers.

The fruits are:—1. *Apples*. There are different kinds: *samarkundi*, the best kind; *zolámandi* or *jilmadi*; the *cháá*, of an oval form; the *yarkandi*, the largest kind; the *kághazi*, which has the thinnest coating; the *tirá máhi*, of a white colour. 2. *Grapes*. The grapes of Badakhshán are equally, if not more, delicious and flavoury with those of Kábul. The different well-known kinds are: the *fukhari*, the best kind; the *husaini*, the *muzaffari*, the *akbáldak*, the *almantodi*; the *sálibi*. A kind of grape, dried and preserved, is called the *ájosh*. The description called *sayagi* or *kishmish* (raisin) is not at all produced in Badakhshán. 3. *Mulberries*. This is the most abundant fruit in Badakhshán. It is to the Badakhshi what the potato is to the Irish peasantry. It is used both fresh and dried. Silk-worms are reared in *Jirm*, in which valley the mulberry-trees abound. 4. *Pear* (*Nák* or *Náshpáti*). The largest pear is produced in Badakhshán. 5. *Apricot* (*zardáhi*) is used both fresh and dried. The latter is called *gholing*. It is inferior to that of *Sarábágh* in the Bamián territory. 6. *Gilás*, a kind of plum, the same as is found in Kashmír. 7. *Alú bálu*, sour cherry. 8. *Alú bukhárá* or *Arghanjdr*. 9. *Amrúti* (Guava). 10. *Charmaghz* (walnut). 11. Almonds (*báddám*), inferior to those exported from Kábul and Ghazni. 12. Melons (*Kharbúz*) of various kinds. Dried Melons called *Kák*. 13. Water-Melons (*Tarbúz*). 14. *Shafálu* (Peaches). 15. *Alúcháh* (a kind of sour plum).

The vegetables are:—1. *Kabuli* (gonnals, long and round). 2. Turnips, white and red. 3. *Labláhi* (Beet). 4. Radishes. 5. Carrot, called *Zardak*,

* I.e. dependent on rain.

† *Seoti* (white rose): *gul-i-zardak* (a yellow flower); *gul-i-kaza-sini* (a white flower); *gul-i-kamild* (a red flower); *kattar* (a yellow flower); *lald* (red flower; wild narcissus).

‡ Some of the plants and drugs which I could make out are the following:—*Zird* (cummin), largely exported to India; liquorice; *zah'r gorda* (a medicinal drug); *khdkahir*; *ustakhaddús*; violet; cowslip; *'annab* (jube); *scammony*; *isparak* (a dyo); *anastida*; *ispand* (wild rue); *kuzákarni*, *jigar*, *zambírah* (various kinds of mushrooms); *chikri* [sorrel?]; *tarán* (a sweet root); *yánták** (a thorny bush).

§ Wild apples; *shákandi* (wild pear); *duldni* (kind of plum); pistachio trees, which alternately produce nuts and *baghunj* dyo; wild almonds; *gul-i-khar*, a prickly bush yielding a sour fruit; *santú*; walnut-trees.

|| The best rice is grown at Yangkilá, in Rustak, and in the *Jirm* valley of the Kokehá.

¶ Mostly grown in Shahr-i-buzurg and Yakkamughal, in the district of Faizábád.

** Mostly produced in the Valley of *Jirm* and the more snowy regions Zebák, &c.

†† The soil is well adapted for the cultivation of linseed; oil is extracted therefrom.

* Vámbéry says, "A kind of thistle the camels are fond of."

from its yellow colour. 6. Spinach (*Isparákh*). 7. *Badlín* (aniseed). 8. *Káni* (white succory). 9. *Tardi* (cucumber). 10. *Gandáná*, a kind of onion [a leek?]. 11. *Karamkalla*, a kind of cabbage. 12. *Kishniz* (coriander seed). 13. *Polash* (mint). 14. *Bashaki*. 15. *Claulái*. 16. *Khurfá* (parslain).

The garden flowers are:—*Sári*, *sosan*, *nargis* (narcissus), *sadbarg* (rosemary); *rumbul*, *gul-i-khairá*, rose, red and white, *kulghi*, *hursinghár* or *ishkpecha*, *astáhpasat*, or sunflower.

The timber-trees are:—*Safeddár* (poplar), *zaring*, *bed majuán* (weeping-willow), *chínár* [plane], and *Archa* [pine], besides the mulberry, apricot, and walnut trees.

Fuel:—*Gaz* [tamarisk], vine, pistachio, almond, peach, pear, *marván*, besides numerous thorny plants and brushwoods.

The districts of *Minján*, *Zebák*, *Ishkásham*, *Wakhán*, *Shighnán*, and *Rúshán* are more mountainous, and much cooler than the above. Not only do they differ [from the districts already described] in their physical features, but the creed, language, character, dress, habits, and manners of their inhabitants are also different. Their productive capabilities, agricultural resources, and population diminish, and their temperature grows cooler in proportion to their approximation to the snowy regions of the Pamer Steppes and the Hindú Kush Range.

The districts of *Rúshán*, *Shighnán*, and *Wakhán* are immediately below the Pamer Steppes, and those of *Zebák* and *Minján* on the slopes of the Hindú Kush Range, as also are the sub-divisions of *Anjumdán* and *Paridán*, subject to Jinn.

The population of Badakhshán Proper is composed of *Tájiks*, *Turks*, and *Arabs*, who are all *Sunnis*, following the orthodox doctrines of the *Muhammedan* law, and speak Persian and *Turki*, whilst the people of the more mountainous tracts are *Tájiks* of the *Shiá* creed, having separate provincial dialects of their own, the inhabitants of the principal places combining a knowledge of Persian. Thus the *Shighnání* is spoken in *Shighnán* and *Rúshán*, the *Ishkáshami* in *Ishkásham*, the *Wakhi* in *Wakhán*, the *Sanglichí* in *Sanglich* and *Zebák*, and the *Minjáni* in *Minján*. All these dialects are materially different from each other, as will be seen from the appended vocabulary.*

The *Tájiks* form the majority in Badakhshán Proper. The *Turks* are, however, generally more opulent, and excel the cunning *Tájik* in bravery, enterprise, in warlike as well as in commercial and straightforward dealings.

(Signed)

MUSPHOOL PUNDIT.

2. *Journey from Pesháwar to Kashgar and Yarkand in Eastern Turkestan, or Little Bokhárá, through Afghánistán, Balkh, Badakhshán, Wakhán, Pamir, and Sirkol.* Undertaken by FAIZ BUKSH, in connection with the Mission of T. D. FORSYTH, C.B., during 1870.

Is September 1865 I travelled through the *Abkhána Pass*, in the territory of the *Miáni Momands*, *Jalálábád*, *Čabul*, *Bámián*, *Táshkurghán*, *Balkh*, *Karshi*, *Bokhára*, *Samarkand*, *Jizakh*, *Oratippa*, *Khojand*, and *Karáma*, to *Tashkand*; on the return journey I proceeded from *Karshi* to *Khozár*, *Sherahud*, *Kongharát*, and crossing the *Oxus*, went to *Táshkurghán*. From *Táshkurghán* I proceeded *viá* *Kunduz*, *Badakhshán*, *Andráb*, and across the *Hindu Kush*, to *Sáldáang*, *Parwán*, *Chárikár*, and *Kábul*, which last place I left in November 1867, and returned to India.

* [Not forthcoming, I regret to say.—Y.]

In December 1867, I proceeded again to Kábul, by the Abkhána route, and returned to the Punjab in June 1868.

In July 1869 I proceeded to Samarkand, *via* the Khaibar Pass, Jalálábád, Kábul, Balkh, and Karshi, and returned *via* Bámián and Ghorband, and Kábul to the Panjáb, where I arrived in February 1870.

At the end of May 1870 I was deputed to meet Mr. T. D. Forsyth, c.n., Commissioner and Superintendent, Jalandhar Division, who had been deputed on a mission to the Court of the Ruler of Yarkand, in Eastern Turkestan, or Chinese Tartary, at Yarkand. I proceeded on this journey from Pesháwar through Tátra, the country of the Mullagoria, *via* Jalálábád, Kábul, Táshkurghán, Balkh, Badakhshán, Wakhán, Pamir, Sarkol, Yang Hisár, and Káshghar. I joined the mission at Yarkand, and returned to the Panjáb in October 1870 *via* Ládák and Srinagar.

My anxiety to reach Yarkand as quickly as possible prevented the prosecution of close geographical research as regards the countries between Pesháwar and Balkh, more especially as I had thrice before travelled through these territories. But I notice certain points which attracted my observation on the occasion of the last journey but had escaped my attention before. I also give a brief account of my observations between Táshkurghán and Yarkand, together with the routes from different neighbouring countries which converge at Táshkurghán.

Marches from Pesháwar to Kábul.

1. Pesháwar to Isparsang, 3 kos.

British territory, inhabited by Khalil Afghans.

2. Shahid Miána, 6 kos.

Miána, in Afghan language, means a house. We encamped at this place, after crossing the Narai spur of the Tátra Hill. The village is situated within the pass. Supplies not procurable, and must be conveyed by the travellers.

To the east of the pass are situated the villages of Laurah Miána, and Jaurah Miána, and belong to the Mullagori tribe.

Temperature by thermometer on 14th June, 88°.

3. Kam Shalmán, 4 kos.

A very high mountain, called Dabr, is met with in this march. Kam Shalmán is also inhabited by Mullagoria. Crops dependent entirely on rain. Drinking water obtained from a spring.

4. Shalmán Kalán, 5 kos.

A hill called *Bacha-i* is crossed during this march, lower than the two hills above mentioned. The village is inhabited both by Momands and Mullagoria. The Lakka [*Dhakka* ?] Hill and the Khaibar are situated to the south of this village.

5. Dhakka, 10 kos.

This village is situated on the northern bank of the Landai or Kábul River, and to the north of this village is Lálpúra. The road through the Khaibar joins at this place.

Thermometer on 18th June, 96°.

6. Lásawal, 10 kos.

Inhabited.

7. Bárákábú [or *Barikao*], 8 kos.

The village is inhabited. To the south lies the Bhattikot plain, which extends to Shinwár.

8. Jalálábád, 12 kos.

The capital of Nangnihár. The heat here is intense. During this weather the people remove to the Sufaid Koh ("white mountain"). Thermometer, 109°.

The following are the dependencies of Jalálábád :—

Lamghán, Kunar, Sheva, Asmár, Núrgil, Shaigul, Alishang, Chaghán Sarai.

From Kunar, Sheva, and Asmár, there is a road which leads in a north-eastern direction to Chitrál.

Up to Jalálábád the heat was intense, and the journey was performed at night, and by short marches. Thenceforward long marches were made.

9. Gandamak, 19 kos.

The direct route was avoided for the sake of expedition, and I proceeded *viâ* the Ashpán Plain, in a south-west direction, omitting Fatahábád and Bálabágh. The country is well inhabited.

10. Burj Sultán, 12 kos.

Proceeded southward, *viâ* Hisárah Ghilzai, avoiding Jagdalak and Híra.

11. Tangi Tarah, 11 kos.

Crossed the *Karkach* into Tangi Tarah, avoiding Tazín, and Haft Kotal, to the north.

12. Kábul, 8 kos.

Avoided the road *viâ* Butkhák.

The following roads diverge from Kábul to different directions :—

South-west through Ghizni, Kandahár, Girishik, Farah, to Herat.

North, through Chárikár, Parwán, Sálúlang, Hindu Kush, Nárín, Khanján or Andráb, to Ghorí and Badakhshán.

North, as far as Chárikár, then turning westward to Bámián, *viâ* Ghorband.

North-west first, then north to Bámián, Haibak, and Tashknrghán.

Stages between Kábul and Bámián, viâ Ghorband. North-west route.

1. Chárikár, 9 kos.

Capital of the Kohistan or mountainous country to the north and north-east of Kábul.

The dependencies are Parwán, Sálúlang, Panjsher, as also Ghorband and Tagao.

To the north-east of Panjsher lie the countries of the Siáh Posh Káfirs, and of the Kator and other people.

2. Kákshál, 12 kos.

Kákshál is a dependency of Ghorband. Between Kákshál and Chárikár is situated the Chartak Kotal, an arm of the Hindu Kush. Kákshál is well inhabited and very fertile. Fruits are produced in abundance.

3. Chárlehi, 8 kos.

The capital of Ghorband. The population consists chiefly of Degáns and Persian-speaking people. Afgháns are in the minority.

4. Karghana, 12 kos.

A dependency of the Hazámjât Shekh Ali tribe, subject to the Kábul Government. The country is well inhabited and fertile.

5. Bulela, 8 kos.

The Shabr Kotal is crossed before reaching Buléla. This is a lofty hill, but level on the top. Bulela is a dependency of the Shabr Hazáraját.

6. Bámián, 8 kos.

Bámián is a well-known place and does not need description.

The following streams occur on this road :—

The Shabr Kotal is drained on two sides, viz., east and north-east. The drainage from the eastern slope flows through the Shekh Ali country, and meeting with the Turkman Darah stream at Kila Saidán, runs on to

Ghorband and Chárikár, and irrigates the submontane tracts of the Kábul territory.

The drainage of the north-eastern slope joins the Irák Stream, which descends from the southern [*qu.* northern?] slope of the Irák Kotal, at Doab Teshkari, and the united streams then flow on and empty themselves into the Bámián River.

The Bámián River is formed by the junction of numerous streams which flow through various passes of the Koh-i Bába, in a south and south-western direction [*read* north and north-eastern?], and which are enumerated as follows :—

1. Darah-i-Shahidán.
2. Darah-i-Fauláli.
3. Darah-i-Khushhak.
4. Darah-i-Kakrak.
5. Darah-i-Ahangarín.
6. Darah-i-Pái Mori.
7. Darah-i-Tojchi.
8. Nai Sabzah.
9. Darah-i-Ali Rabát [*A'k-robat* ?]

The Bámián River unites with the Kahmard River at Doab Mekhzari,* and the united streams, flowing through Kunduz and Ghorí, fall into the Oxus.

This route, *viâ* Ghorband, from Kábul to Bámián is preferable in the cold weather to that *viâ* Gardan Dewár and Kálú Kotal,† except on the Shabr Kotal; there is less snow elsewhere. In January, the Kálú Kotal is impassable; snow is deep, and the cold intense and dangerous to life.

Kábul to Táshkurghán, otherwise called Khulam, viâ Bámián.

1. Kila Haidar Khan, 4 kos.

North-west direction.

2. Arghanda, 4 kos.

3. Takána, 10 kos.

North-western direction.

4. Sehkila, 13 kos.

Inhabited by the Hazárajat. Passed through Kotal Onái and Gardan Dewár.

5. Ahangarín, 14 kos.

Passed through Kházzár. Crossed the lofty mountains Kotal Kalú and Kotal Panj Filán in 4½ hours, and encamped in Bámián territory.

6. Ak-Rabát, 10 kos. North.

Passed through Bámián and Sughdar [*Surkhdar*], caravan-halting places.

7. Kahmard, 18 kos.

Passed through Saighán and Sokhta Chinár, caravan halting-places. The Saighán stream descends from the Koh-i-Bába, through the Khárgín Pass, and joins the Kahmard River, after flowing through Shekhah. The source of the Kahmard River descends from Chehal Barbar, in the Koh-i-Bába. At Doab Mekhzari it joins the Bámián River, and the united stream, flowing through Ghorí and Kunduz, falls into the Oxus. The Kotal Dandán Shikan was crossed in this march.

8. Kará Kotal, 15 kos. North.

Halted at night on the summit of the Kará Kotal. Marched beyond Kila Badar [*Madar*?], caravan halting-place. A road leads westward from Kará Kotal to Dara Yúsuf.

* In the North Hazárajat Shekh Ali.

† [*Viz.*, the Hajjigak Pass.]

9. Rú-í, 10 kos.

Descending from the Kará Kotal, travelled in a north-western direction through Dara Abi Khorak. Passed through Doáb Sháh Pasand, caravan halting-place. Two streams flow into Doáb Sháh Pasand, draining the Dara GhárYár Malik in the south-east, and Dara Abi-khorak in the south-west. Both streams unite at Doáb Sháh Pasand, and flow towards Hailak and Táshkurghán or Khulain.

To the west of Rú-í are situated Dara Yúsuf and Dara Búni Kará, dependencies of Mazár-i-Sharif and Balkh.

To the north of Rú-í, the direct road to Yakka Cháh runs on to Asiábád, a dependency of Haibak.

10. Sarbágh, 16 kos.

From Rú-í two roads lead to Khurram, one north-east from the Chambrák Kotal running to Pul-i-Ab Gili; the second, north-west, through the Aspár Dara. I proceeded from Rú-í by the Aspár Dara, a winding pass, which leads over a mountain chain. At Pul-i-Ab Gili, the stream which drains this pass joins the Táshkurghán River. Did not halt at Khurram, which is a caravan stage, but went on to Sarbágh.

Between Rú-í and Sarbágh there are the following villages situated in the passes, viz.:—

Neza Kák.
Ghazi Mard.
Gildán.
Gnzar Baklák.
Deh Langar.
Chárásia.
Chasma Mahi-Jahán.

From this place, a road leads north-east, through Khoja Gala and Aksú, to Ghorí.

11. Dulkháki, 15 kos. North-west.

Did not halt at Darah Zindán or Haibak.

12. Khulain, 10 kos.

Did not halt at Ilazrat Snltán, a caravan stage to the north-east; nor at Ghizni Kak, another caravan stage, to the north-east; and passing through the village of Syát, in the Tangi Khulam Pass, proceeded north-west to Khulain or Táshkurghán. The [defile called] Tangi Táshkurghán is 21 feet in width.

Several roads converge from various parts at Táshkurghán, which is the centre of trade from eastern, northern, and southern Asia. The Russian boundary is also close to this place. I give a description of the several routes.

Routes leading from Khulam to the borders of the Russian possessions in Central Asia.

1. Khulam to Mazár-i-Sharif, 4 farsakhs (26½ miles); 1 farsakh = 5½ miles.

The old town of Balkh is 10½ miles or 2 farsakhs from this place to the west.

2. Arghím, 3 farsakhs.

North.

3. Karshigak, 4 farsakhs. North.

4. Chuchka, 3 farsakhs.

North; on the bank of the Oxus. The Amir of Kábul's possessions terminate here. Inhabited by Turkmáns.

5. Karakhwál, 5 farsakhs.

Across the Oxus, on the north bank. The Amir of Bokhára's possessions begin here. Inhabited by Turkmáns.

6. Yakka Partal, 4 farsakhs.

These are caravan marches; a kásid can easily make the journey to Yakka Partal or Asfantodah in four days, and a horseman, free from incumbrances, in six days.

7. Asfantodah, 4 farsakhs.

Sandy desert; water, salt.

8. Chirbar, 5 farsakhs.

As above. Here and there a few families live in tents.

9. Kírkankjak, 6 farsakhs.

As above.

10. Karshi, 5 farsakhs.

Karshi, in the Turkish language, means a palace. It is an ancient city; present name given by the Turka. It is also called Nakhsháb, from a tradition that, during the time of Abbassides (Arabian Califfs), there was a necromancer here named Makna, who by some trick displayed in a well a phenomenon of the new moon (Nakhshah), employing mercury for this purpose.

Inhabited by the Mankats, tribesmen of the Amír of Bokhára, and Arabs and Uzbaks.

In 1868, the son of the Amír of Bokhára, having rebelled against his father, a Russian force was despatched from Samarkand to aid the Amír. The city was conquered, and, as a favour, made over to the Amír, who is now in possession.

From Karshi to Samarkand, held by the Russians. North; north-east.

1. Jarkadah [*Shorkutak*?], 2 farsakhs.

No habitation. Two desert plains have to be crossed, viz., Sharbazar, and Irtiám.

A road goes from here to Shahr-i-Sabz, *viâ* Jáu and Chiraghchi.

2. Cholkáh, 6 farsakhs.

No habitation, except a place called Ajram.

3. Naharán, 5 farsakhs.

Country inhabited.

4. Samarkand, 2 farsakhs.

These are caravan marches; kasids go from Karshi to Samarkand in a day and night.

From Karshi to the Russian Fort Katta Kurghán. North.

1. Ailánti, 7 farsakhs.

No habitation. Three plains named Kunghar, Sai Hácha Báf, and Gharínsai, have to be crossed; kasids make the whole journey in one day.

2. Katta Kurghán, 6 farsakhs.

Katta Kurghán is a large town on the bank of the Zarafshán River, and has a large population. It is now in possession of the Russians. There is a garrison commanded by a Captain.

From Karshi to Shahr-i-Sabz. North-east.

1. Chiraghchi, 8 farsakhs.

A city subject to the Amír of Bokhára.

2. Yakka Bagh, 2 farsakhs.

3. The city of Kitáh, 1 farsakh.

A kasid makes the journey from Karshi to Shahr-i-Sabz easily in one day. The original name of Shahr-i-Sabz was Kesh. This city is the birthplace of the Amír Taimúr.

The late Mirs, Júra Beg and Bába Beg, of the Kenagas tribe, rebelled

against the Amir of Bokhára. At the close of 1870, General Von Kauffmann, the Russian Gubernator of Turkistán, sent a force to aid the Amir of Bokhára and to attack the city of Kitáb, justifying this measure on the ground that the people of the Shahr-i-Sabz territory were in the habit of committing depredations in Urgot* and other places in the Russian territories. After the capture of the city it was made over as an act of favour to the Amir of Bokhára. In the treaty concluded in 1868, between Russia and Bokhára, the city of Shahr-i-Sabz was entered as a possession of the Amir of Bokhára. The Mirs of Shahr-i-Sabz are now at Tashkand.

From Tashkurgán to Herát. South-west.

1. Mazár-i-Sharif, 5 farsakhs.

2. Balkh, 2 farsakhs.

3. Akhcha, 7 farsakhs, and

4. Shibarghán, 7 farsakhs.

Inhabited by Sálúr Turkmáns, subjects of the Amir of Kábul.

5. Andkho, 8 farsakhs.

To the north of Andkho, at the distance of 98 farsakhs, is situated Karki on the Oxus. There are two forts, one on the northern and the other on the southern bank. There are [at Karkhi] 5,000 Turkmán families subject to the Amir of Bokhára.

6. Maimana, 13 farsakhs.

The old city was named Chikhatta. The present city, Maimana, including its dependencies, has a population of 12,000 families of the Karáma tribe. It is a dependency of Balkh.

7. Cháreshamba, 6 farsakhs.

A dependency of Maimána; inhabited by Tájiks and Ferozkohi Hazáras.

8. Kahlák Eshan, 8 farsakhs.

Population, Karáma; a dependency of Maimana.

9. Karmach, 8 farsakhs.

Inhabited by Jamshaidi Hazáras, subordinate to Hirát.

10. Bálo Murgháb, 6 farsakhs.

Population, Jamshaidi Oimák; subject to Hirát.

11. Kila Nao, 15 farsakhs.

Population, Oimák, Hazára, Ferozkohi. The Murgháb stream is crossed before reaching Kila Nao; this stream disappears in the sands of Merv.

12. Herát, 10 farsakhs.

Two Kotals are crossed in this march, viz., the Filkush and Zarmast. The city of Herát is well known. It has the gate through which Darius passed to conquer India.

A road from Bokhára joins at Murgháb. The following are the stages on this road:—

4 farsakhs. West. From Bokhára to Paikand.

3 farsakhs. Karákol.

1 farsakh. Chárjú across the Oxus.

18 farsakhs. Pindi.

25 farsakhs. Márchák. The Herát stream called Hari Rúd is crossed?

6 farsakhs. Murgháb.

There is no habitation between Chárjú and Pindi. The country is a sandy

* In possession of the Russians. The following places are situated to the south-east [read north-east] of Shahr-i-Sabz, in the line of the country between the latter city and Samarkand:—

Kalkama.
Tukhta Karácha.
Karatappa.

desert. Water in wells is salt. This desert, 18 farsakhs in extent, is traversed in a day and night. About 5,000 Sárúk Turkmán families live in tents in Pindi; they are independent.

Between Pindi and Maríchák or Márichák there are about 4,000 Sárúk Turkmán and 8,000 Oimak Jamshaidi families, who all live in tents. These are all independent.

Between Chárjún and Merv,* there is no habitation, the country being a sandy desert. 30,000 Toga [*Tukka*] Turkmán live in huts on the banks of the Murgháb River. They were formerly subject to Bokhára, but are now independent. From Merv to Sarakhs the distance is 30 farsakhs. The population consists of Turkínans and Persians; about 20,000 families living in tents and settled dwellings. They are now subjects of Persia.

The distance between Sarakhs and Mashhad, *viâ* Kilat-i-Nádiri, is 50 farsakhs; by the desert route 30 farsakhs. A Russian Consul is stationed at Mashhad to look after the commercial interests of his countrymen.

Sultán Mohaminád, son of Darvesh Mahmúd, a Balkh historian, states that by order of Sultán Malik Shah Seljuk, the city of Merv was established in the heart of Khorásán, the distance from Merv to several cities being as follows:—

- To Mashhad, 60 farsakhs.
- „ Herát, 60 farsakhs.
- „ Organj (Khiva), 60 farsakhs.
- „ Bokhára, 60 farsakhs.
- „ Chárjún, 40 farsakhs.
- „ Sarakhs, 30 farsakhs.

As Merv and Sarakhs are situated midway between the Persian, Russian, Afghánistán, Bokhára, and Khiva territories, the Turkmán of those places (Merv and Sarakhs) commit depredations within these territories. They will not desist from committing such outrages and selling human beings into slavery until they are subdued by a civilized government. The attention of the Government of Russia is now turned in a greater degree than formerly to Khiva and the Turkmán of these territories.

Stages from Tashkurhán (Khulam) in Balkh to Yarkund, through Kunduz, Bulakhshán, Wakhán, Pámer, Sarkol, Yang Hídr, and Káshghár.

Note.—Distance represented by the time occupied in the journey, and directions ascertained by the compass.

1. From Tashkurhán to Yangárich, 3 hours 50 minutes.

North-east. Time occupied in reaching Chilaiwán, 50 minutes. From Chilaiwán proceeded due east to Manza [*Mauza*?] Shahidán, and from thence to the village of Yangárich in 3 hours. The ancient city of Khulam lies north-west of Yangárich. The northern plain extends to the bank of the Oxus, on which river there are two ferries, named Kandah Guzar and Khushk Tippa, belonging to this plain. Travelling beyond these ferries, the Oxus is crossed to go to Kubádíán, situated to the north of that river, in Bokhára territory. The southern boundary of the country traversed in this march runs south-east from the mouth of Tangi-Tashkurhán, through which caravans proceed from Kábul, along a chain of mountains known by the names of *Gongdam*, *Yaguzár*, to Ak Sarai, in the Kunduz territory. From the *Kopak* Mountain, a shorter road leads to Ghiznigak and Ilzrat Sultán, and another joins the Kábul road. There are visible, at a little distance north-east of Yangárich, the ruins of an ancient fort. To the north of the habitation of Yangárich, the country is cultivated within a distance of three miles, and irrigated by three

* 10 farsakhs.

canals from the Tashkurghán River, called (1) Kiz-Aya-Ali, (2) Garmseli, (3) Yangárich. The last term in the Turkish language means "a new canal."

2. Ak Sarai, 9 hours 54 minutes.

From Yangárich to Abdán 1st, due east, distance, 1 hour and 36 minutes. From thence north-east, to Kotal Shabágh Ali, 1 hour and 12 minutes. Next to Abdán 2nd, same direction, 1 hour 48 minutes; from thence again in the same direction to Abdán 3rd, 2 hours and a half; from Abdán 3rd, to Kotal Irgank [*Arghának*], an earthen mound; time occupied, 2 hours; direction east; from thence, north-east, to Ak Sarái, 48 minutes. The whole distance from Yangárich, according to local measurement, is 12 farsakhs. The whole is sandy desert or stony ground; To the south of Abdán 2nd, there is a hill called Koh-i-Kassáh, in which there exist water springs to a distance of 5 miles. It is practicable to carry the water of these springs to the above-mentioned plain. At a distance of 2 miles from Abdán 2nd, there is a dry well about 180 feet in depth. A ridge of hills, called Gohar and Chál, runs along the south to Baglán and Ghorí. There is another hill also to the south called Khoja Tút, in which there is a water spring at a distance of 6 miles from the road, and there are two villages named Koba Bulák and Kalin Kadak, situated along the stream which flows from this spring. The road to Baglán passes through these villages. The River Oxus runs along to the north-east of this march. There is a ferry called Kila Zál, from which a road leads to Kubádlán.

3. Kunduz, 2 hours 48 minutes.

From Ak Sarái to the village of Ali Khánam, 48 minutes; thence to the Kunduz River, east, 24 minutes. Then across the river to the village of Chárdak, north-west [east?], 36 minutes. From Chárlak, north-west [east?], Kunduz, 1 hour.

4. Tálíkán, 8 hours 48 minutes [28?].

From Kunduz, south-east, the village of Kalla Gáo, 8 minutes. The villages of Kabáhar, Chidukhtáin, and Nárbáshí, 36 minutes. Thence east, *Chole Darah*, also known as Darah-i-A'mir, 24 minutes; thence, north-east, Beslikoprák Nayastán, 30 minutes. Further on, north-east, Tarnao, 36 minutes, situated on the northern edge of the road. Koshtippa and Charik Kalán, south-east, 24 minutes; thence, north-east, the village of *Sad Runzán*, 24 minutes. Farther on, Jangal Báshí, in the same direction, 34 minutes. To the south of the last-named village is situated the village of Eshán Top. From Jangal Báshí, south-east, the village of Khánabad, 34 minutes. Ambarkoh [lies] north of Khánabad, and the territory of Hazrat Imám, which extends to the north of Ambarkoh, in a north-easterly direction. From the Hazrat Imám or Shahiban [*Sharván*?] Ferry, there is a road leading to Kurghán Tippa in the Kuláb territory of the Bokhám kingdom. The distance from Hazrat Imám to Kuláb is three marches.

Khánabád, north-east, to Dasht Chagha, 1 hour 12 minutes; thence eastward, Kotal Kushlak, 48 minutes; thence, Kila Bangi, north-west, 8 minutes; further on, Tippa Bangi, north-east, 34 minutes; thence the village of Khoja Changal, east, 30 minutes; thence the mouth of Tálíkán Dara, east, 24 minutes; from thence *Kal Bars*, north-east, 30 minutes; thence in the same direction, Tálíkán, 12 minutes.

To the south of Tálíkán lie the villages of Ak Mazár, Koh Chál, and Chashma Ser; to the north, the Ortah Buz Mountain; north-west, Ambar Koh; to the north-west [east?] of this, Khojah Ghár and Dasht-i-Achu, where the Kukeha Badakhshán River falls into the Oxus.

The Bangi River descends from the Nárin Mountain in the Hindu Kush, and flows through Andráb.

The Tálíkán stream rises in the Koh-i-Paryán, Farkhár, and *Murasach*, which are arms of the Hindu Kush; it runs south-south-east [read north-

north-west]. The streams unite at Khánábál, and then flowing on fall into the Kunduz River.

5. Mashhad, 10 hours 50 minutes.

From the Fort of Tálíkán, south-east, to the Fort of Virána, 36 minutes. From thence, north-east, to Deb Músa, Mingbáshi, and Chárásia, 12 minutes. To the south of these is situated Búlám Darah, across the Tálíkán River. From Chárásia, north-west, to Kashtak Pattani, 24 minutes. ~ From thence, in the same direction, Kashtak Khoja, 26 minutes. Kashtak Khoja to Ahán Darah, 24 minutes. From Ahán Darah, north-east, Pahlwán Tush, 26 minutes. From thence to Kákshádmán, north-east, 38 minutes. From thence to Toghdán and Bani Ail Báshi to Kotal Latta Band Khána Háí Karlagh, east, 8 minutes. From the foot of the Kotal Latta Band, the first ascent, north-east, 12 minutes; the second ascent, 15 minutes. The summit is level; the road then proceeds to the east for 12 minutes. The descent, in north-east direction, occupies 34 minutes. From thence, through Ming Chakúr to the foot of the Kotal, 1 hour.* There is a further descent from Ming Chakúr, in the north-east direction, which occupies 1 hour and 4 minutes to go down. From thence, north-east, Kalaogán, 1 hour and 30 minutes, the road passes through a level plain.

From Kalaogán, north-east, the village of Kasarzián, 34 minutes. From thence east, across a Kotal, and then north-east, Karáwal Tippa, 24 minutes. From thence the village of Chárgunjashkhán, in the same direction, 34 minutes. From Chárgunjashkhán to the Béné (nose) of Koh Darah, 12 minutes. From thence to the plain of Kara Búlák, north-east, 1 hour 8 minutes. From Kara Búlák to Kulábái, in the same direction, 36 minutes. From Kulábái to Mashhad, 12 minutes.†

6. Dargán [*Daryán*?], also known as Darah-i-Aim, 4 hours 18 minutes.

Mashhad to Kotal Ali Beg, north-east, 2 hours 24 minutes. Crossing the Kotal Hisárak, arrived at Návi. There is a stream here called the Darya-i-Návi, which descends from Chúchi and Lala Maidán, arms of the Hindu Kush, and flowing northwards joins the Mashhad stream near the Fort of Gumbaz, and the two united fall into the Kukcha River.

From Návi, north, Yazghar Darah, 34 minutes. From the latter, Kotal at Chapar, 24 minutes. From thence, Kotal *Terpichichar*, 28 minutes. From thence, Rawát, 24 minutes. From Rawát to Gandakol, north-east, 36 minutes; from Gandakol to Karagh, in the same direction, 48 minutes.

From thence to Darah Teshgán. The Teshgán River descends from Ghar-sung, Ousáy, Ailán-Devistán, branches of the Hindú Kush, and running northwards joins the Kukcha or Badakhshán River near the Fort of Zafar.

From Teshgán, north-east, the Kotal, Ab-i-Nabát. From thence, south-east, to the foot of which the road turns south-east. To Alúcha Khan, 36 minutes. From thence, east, *Daryun*, also known as Darah-i-Aim. The Darah-i-Aim River rises in the Hindú Kush Mountains, and running northwards through the Airghálák, Gharchún, and Sel Jangal Passes joins the Kukcha or Badakhshán River near the Fort of Zafar.

7. Argú, 5 hours 8 minutes.

From Darah-i-Aim to the commencement of the plain of Bazár Sáí, north-east, 36 minutes. From thence to Chashma-i-Sháh, in the centre of the Bazár Sáí Plain, direction north-east, 12 minutes. From thence to Chárgáo,

* To the east of Ming Chakúr is situated Ak Búlák and the mountain called Zarlalu Darah, to the south [*south-west*?] is situated Darah Chái, to the south, Farkhar, and to the north-east, Kalaogán. Here there is a fort and a custom-house, where the Badakhshán authorities levy duty on merchandise, at the rate of Rs. 3.8 per pony load.

† The Mashhad River runs from the south, and passing through Khumbak and Dárah Kari, joins the Kukcha or Badakhshán River near the Gumbaz Fort.

north, 24 minutes. The Bazár Sái Plain terminates here. The Kotal Chárgáo, 2 minutes. From thence the Chárgáo Plains, north-east, 12 minutes. From thence the Kotal Ab-i-Bárik, in the same direction, 8 minutes. From Ab-i-Bárik, though a level plain, 3 minutes; then down a descent, north-east, 24 minutes. From the stream of Ab-i-Bárik to the top of the Kotal Ab-i-Bárik, 24 minutes. From the foot of the Kotal to the commencement of Chárkul and Khák Toda, north, 36 minutes. From Khák Toda, north-east, to Miána Darah, 48 minutes. From Miána Darah to Gháradarah, 24 minutes. From thence to Shal Khalik, north-east, 29 minutes. From thence to Ghál Lalla, 10 minutes. From thence, north, to Argú, 16 minutes.

From Argú a road leads north-west to Rusták and Chaiab, from which last place it goes on to Yang Kila, on the bank of the Oxus.

The following ferries on the Oxus belong to Chaiab,—

Safaid Sang,

Dawang,

Yang Kila,

Darkad,

Sunti.

These ferries are in the possession of the Amir of Badakhshán. From these ferries roads go to Kuláh.

8. Faizábád, the capital of Badakhshán, 2 hours 30 minutes.

From Argú to the Argú stream, north-east, 48 minutes. From the Argú stream to Karátippa, north-east, 36 minutes. From thence to Kotal Rozzan [*Reshkán?*] 1 hour, north-east; descend from the Kotal, 30 minutes. From the foot of the Kotal to the commencement of the Khimehán Plain, level road, north-east, 24 minutes. From this, through the Khimehán Plain, across the Kukchá River to Faizábád, the capital of Badakhshán, north-east, 12 minutes. Passing from Faizábád northwards, through Yastal, Rágh, and the Fort of Máván (possessions of Badakhshán), and along the edge of the Sheva Plain, the traveller arrives at Kila Khum, the capital of Darwáz. Kila Máván is the boundary between Badakhshán and Darwáz; Darwáz is a dependency of Kokán.

9. Bahádrak, 4 hours 34 minutes.

From Faizábád, south-east, to the village of Filobán, 24 minutes. From thence, again south-east, to Firgáni. From thence across the Kukcha River to the village of Chatta, south-west; my way lay now along the *north* bank of the Kukcha River. From Firgáni to Shorábak, east, 36 minutes, and from thence to the village of Khánkah. Opposite to Khánkah, to the south of the river, are situated the Isfangaó and Shaik Passes. The streams which descend through these passes run northwards into the Kukcha River. To the south-west of Khánkah, across the river, is situated Bágh-i-Mubárik, to the south of which latter place again is situated Darah Khásh. The Darah Khásh Plain extends south-east to the Hindú Kush chain of mountains and the habitation of Jirm. Proceeded from Khánkah south-east, across a bridge on the river, to the village of Rabát, which place was reached in 1 hour and 12 minutes. To the south-east of this bridge is situated the Rafak Shutar Gardán, a lofty and difficult hill, the pathways through which are narrow, winding, and difficult.

From Rabát, south-east, to Tang Faizábád, 24 minutes. From thence, east, Tang Zarakhah, 12 minutes. To the north of this place are visible the ruins of the village of *Pookhehull*, which extend to the boundary of the *Páyár* on the north. Tang Zarakhah is watered by streams which flow from the Sheva Plain and Farmarágh.

From this place roads lead to the Sheva Plain, to Shighnán, Darwáz, and thence on to Karátgin and Kokán.

To the north-east of Tang Faizábád above-mentioned is situated the Orghanj Khowa Pass, through which there descends a stream, called Karpan, which falls into the Kukcha River southwards.

To the north-east of Tang Zarakhah there is a road which leads over a hill named Shahbah Mirahab, eastward, to Páyin Shahr. From Tang Zarakhah to Shashpul, east, 46 minutes. To the west of Shashpul there are two or three houses on the bank of the river, and the habitation is named Kabát Khál Beg. Here unite the Zaiták and the Jirm Pass streams, which flow from the east and south-east respectively. The Jirm stream descends from Karán and Munján, which are situated on the boundary of the country of the Siáh Posh Kafirs. The Jirm Pass runs in a south-east direction to the right of the bridge above mentioned.

A road leads from Jirm to Kábul, southwards, passing through Mazár Shahi Nasir, Khusro, *Ulur*, Kurán, Paryán, Kotal Panjaher, and thence across the Kotal to Chárikár, and from thence to Kábul.

To the north of the bridge lies the extensive plain of Dashi-i-Parákh [*Baháruk*?], which is irrigated by a canal from the Zaiták River, entering the plain at Yárlár.

From the bridge, east, the village of *Jubchi*, 36 minutes. From thence Mazár Khoja Kayám-ud-din, 12 minutes. From thence, north-east, *Dó-as* [12 minutes?]. Here two streams unite from Zardeo and Sarghilán and then fall into the Zaiták River. The town of Baháruk is situated to the north-east of *Dó-as* (or *Doáh*). This place produces the best fruits in all Badakhshán. North of Baháruk are situated the *Gho* and *Vakhshir* Hills, across which to the north lies the Sheva Plain, through which a road also leads to Darwáz. To the south of Baháruk is the hill named Daráz-i-Darda, to the east Zardeo, to the west Khairabad and Mughzár. To the south of Khairabad are situated Farnargáh [*Farmardgh*?] and Payiúr [*Payín*?] Shahr.

10. The village of Aoji, 4 hours 54 minutes.

Proceeded southwards from Baháruk, and arrived at the village of Yárlár in 36 minutes. From Yárlár proceeded south-east, and passing through Tagao Almish reached the village of Oshgán in 48 minutes. To the south of Oshgán, across the river, there is situated the village of *Rishtak*, perched on a hill; east of Oshgán the village of Bagh-i-Kurbán Mahamad Bai; and to the east, at the foot of a hill, the village of Khushdareo. To the south of the hill there is a road which leads to Khastak, Yangán, and Mazár Hazrat Said-Shah Nasir Khusro.

From Bāghi Kurbán Mahamad Bai, east, Yazdah Akheba, distance 36 minutes. From thence, north-east, the village of Ashtákan, distance 1 hour. To the south of and opposite to Ashtákan across the river is situated the village of Shokhchan. South-east of Ashtákan, the village of Shágán, distance 1 hour. From Shágán, south-east, distance half an hour, the village of *Káshluk Turang*, at the foot of a hill to the west of the village of Chákarán. From Chákarán, south-east, the village of Aoji, distance 24 minutes.

11. Tlrgarán, 6 hours 0 minutes.

From Aoji, south-west, Pul-i-Chákarán, distance 15 minutes. Proceeded from thence, south-east, for 1 minute, then turned south-west, 3 minutes, then due south to the village of *Barakdrám*, 12 minutes. Chákarán, Ghaneó, Yakhshera, are situated at the foot of a hill to the west of the road. To the east, on a hill, across the river, is situated the village of Gharneo. From Barálarám, south, the village of Rukhsan, 24 minutes. From thence Bagh-i-Chármaghiz, 36 minutes. From thence to the villages of Zo and Ghachchán, 16 minutes. The village of Zo is situated to the east of the road. Ghachchán is situated on the top of a hill, and the cultivated lands of the village lie in the plain below. From Zo to the village of Khashfin the road runs south.

Khashfin is situated on the west, distance 23 minutes. From Khashfin, south-west, the village of Oshtarfi, distance 24 minutes. From thence Namázgáh, 8 minutes south. To the east, across the river, under a hill, the village of Yomal. From Namázgáh, Bagh-i-Pish, south-east, 30 minutes; from this place a road leads to Dárah Bázgír and Zaibák. The habitation of Pish is to the north-west of the road.

From Pish to Jangal Sufián and the village of Sufián, south-east, 12 minutes. East of Sufián, across a hill, is situated Khiarma Tagáo. To its west, also across a hill, lies the territory of Yangán.

From Sufián to Hamba Dúzdán, 35 minutes. For 24 minutes after leaving Hamba Dúzdán proceeded south-east. To the east of Hamba Dúzdán is situated the village of Karang. To the south-east of Hamba Dúzdán there is a difficult Kotal, named Shakhak Karsang, which I crossed, and then turning south-east went on to the bridge, distance 36 minutes. Arrived at Pul Mauza Tigarán in 1 hour.

12. Zaibák, 5 hours 42 minutes.

From Tigarán, south-east, to the village of Varchi, 24 minutes. From Varchi, south-west, across the river, the village of Alúchgareo. From thence, Sufaid Darah, south-east, 36 minutes. To south-west of Sufaid Darah, the villages of Kilát and Kazder. There is also a bridge here. From Kazder, east, Yárdáo, 12 minutes. From Yárdáo, south-west, the village of *Gaó Tag*. Across the river, under the Kashtak Hill, is situated the village of Záonik. The summit of the Záonik Mountain is perpetually covered with snow. From the village of Kazder to Rafak *Asba Ghayab*, north-east, and then to the village of Uzmak, 20 minutes. From thence, south-east, to the commencement of Sadrásh, and from the termination of Sadrásh to Rabát Chaltan, 1 hour and 24 minutes; Sadrásh is a wide pass, south-east of Rabát Chaltan. From Rabát Chaltan to Buri Top Khána, 1 hour and 16 minutes. From Top Khána to Dasht-i-Tezáb, thence to Payás, thence to Ain Vatak, and from thence to Gaó Khána, 1 hour and 30 minutes. Gaó Khána is situated to the north of the road; Zaibák to its south-east. Two passes, viz. the Nuksdn and Khar Tezah, run down from Káshkárú, in Lower Chitrál, north and north-west, and unite at Zaibák, where the streams which descend through these passes unite and form the body of the Badakhshán River. This river lower down to the west is named Kukcha, from the blue colour of its water, "knk" in Turkish meaning the sky or blue. Probably this name was given by the Karlagh Turks, who inhabit Khoja Ghár, where this river falls into the Oxus; and, in fact, this river is called by the name of Kukcha by these Turks alone. The people of Badakhshán call it the Falzábád or Zaibák River.

Between Zaibák and Chitrál intervenes the Hindu Kush chain of mountains. There are three high snowy peaks on this chain, which are named respectively Doráh, Nuksdn, Khar Tezah. The Nuksdn and Khar Tezah adjoin each other, the former being to the left, the latter to the right of the road going to Chitrál and Zaibák. These peaks are very lofty, and are always covered with snow. An extremely cold wind blows here in the summer months, which is fatal to travellers. The following is the route from Peshawur to Zaibák:—

1. Peshawur to Hashtnagar..	..	..	..	13	kos.
2. Malkand, Swát Mountain	..	..	..	15	"
3. Dir ..	..	..	..	12	"
4. Miani ..	..	..	..	6	"
5. Ashrath ..	..	..	..	8	"
6. Kaltak ..	..	..	..	6	"
7. Darosh ..	..	..	..	7	"
8. Kas ..	..	..	..	8	"
9. Chinarakand ..	..	..	..	10	"

10. Káshkár	.. .. .	6 kos.
11. Rozyak	.. .. .	14 "
12. Jitar	.. .. .	6 "
13. Oghad	.. .. .	5 "
14. Gharistán	.. .. .	14 "

At the foot of the Dorah † Kotal, in
Zaibák territory.

15. Sanglich	.. .. .	8 "
16. Iskutal	.. .. .	6 "
17. Zaibák	.. .. .	8 "

Under the Dorah Kotal there is a spring, the water of which flows to Zaibák, through Sanglich. Another stream descends from the Kotal Nuksán and Khar Tezah, and flows into Zaibák. A third stream descends from the Koh-i-Sabz, which intervenes between Sarghilán and Zaibák. These streams uniting at Zaibák form the Badakhshán or Kukecha River.

From Zaibák, the following route leads south-east [west ?] to the country of the Siáh Posh Kafirs :—

From Zaibák to Sanglich,
Dozakh Darah,
Shahr,
Fort Munján,
Porak,
Fort Kalar, the capital of Kafiristán.

At the close of July 1870, Mir Mahmúd Shah, the Chief of Badakhshán, made a most successful attack on Fort Kalar, and brought a large number of Kafir captives to Badakhshán, whom I saw at Faizábád. Amir Taimúr interfered in the internal administration of the Kafirs, and Bábar also.

13. Zaibák to Iskasham, † 3 hours 2 minutes.

From Zaibák to the village of Zarkhán, north, 8 minutes. To the north-west of the road is situated the village of Zarrák, and to the north-east the Olji Plain. To the north of Zarkhán is situated the Rat Pass. The drainage of this pass flows to Zarkhán, and falling into the Zaibák River runs on to Badakhshán. Between Chákarán (*see* No. 10) and Zarkhán intervenes the Rat Mountain.

From Olji to Houz Bázgír, south-east, 24 minutes. There is a lead-mine to

* The capital of Lower Chitral. [It is the Chitral Town of our late Maps.]

The following is the route from Káshkar to Kafiristán :—

Káshkar to Orgbach,
Oiu,
Talasgom,
Fort Lode, called after a tribe of that name.

† It is called Do-rah from the fact of two roads diverging from it, viz. one westward to the country of the Siáh Posh Kafirs; the second, north-west to Zaibák, and thence to Badakhshán.

The following is the route, by the Nuksán and Khar Tezah Kotal, to Zaibák :—

From Oghad to Shughad (*see* No. 13 in last route, above).
Augúr, caravan stage.
Kor, or Lashikargah, caravan stage.
Kotal Nuksán and Khar Tezah.
Khána-i-Mohabbat, at the foot of the Kotal, subject to
Zaibák.
Dehghol.
Zaibák.

: A road leads from Iskasham, north-west, through Ghárán, Shighnín, Panuj, in Badakhshán territory, to Karátgin, in the Kokán kingdom.

the east of Hons Bázzir. The habitation of Bázzir is to the north-east of Zarkhán, arrived at the village of Bázzir in 1 hour; proceeded from thence through the Pushtibán Plain, and arrived at Iskásham in 1 hour and 30 minutes.

14. Varakh, 2 hours 56 minutes.

Proceeded eastward. At Iskásham the River Panja (Oxus), which flows in a westerly direction up to that place, turns to the north. Here also the stream which descends through the Gaoíndrah Darah in the south, falls into that river.

From Iskásham, across the Gaoíndrah stream, to Mauza Turbat-i-Sayyadán, 4 minutes. From thence, east, the Dasht-i-Shakach, 30 minutes. From thence Akhah-i-Shakach, 16 minutes. Thence the village of Potar, north-east, 12 minutes. The boundary of Wakhán commences from Potar. To the south of the village of Potar there is a pass [*walley*?] called the Potar Pass, which runs south to north. The drainage of this pass falls into the Panja River. From the village of Potar, north-east, the village of Kázdah, 30 minutes. From thence the Fort of Sad-ishtarigh; across the Sad-ishtarigh stream, 36 minutes; the drainage of the Sad-ishtarigh Pass flows northwards into the Panja River. Proceeded from thence north-east, and then turned due east, and arrived at Varakh in 48 minutes.

15. Pagish, 4 hours 23 minutes.

From Varakh, north-east, Sail Kishinkhán, 36 minutes. From thence, in the same direction, the village of Shakharf, 1 hour 35 minutes. Thence crossing the Ab-i-Siáh Pagish stream, reached Pagish in 2 hours and 12 minutes.

16. Panjah, the capital of Wakhán, 5 hours 28 minutes.

From Pagish, north-east, the village of Khandúd, 1 hour 12 minutes; the village is situated at the foot of a hill to the south of the road. The River Panjah is to the north of the village of Khandúd. A hill intervenes between the villages of Tarich, Márkhan, Yaiko, Moléko in Lower Chitrál, and Khandúd. These four villages of Lower Chitrál run parallel to Pagish. From Khandúd to the village of Pizák (south-east of the road), 12 minutes. From thence, north-east, Mughzár Aishmurch, 1 hour and 36 minutes. From thence, south-east, the village of Pagshi [8 minutes?] From thence, north-east, the Darich Plain, 24 minutes. Across the river, to the north, are situated the villages of Darich and Chirkín at the foot of a hill. From the Darich Plain, Fort Panjah, the capital of Wakhán, north-east, 36 minutes.

Here two streams, one flowing in a north-westerly direction from Hauz Sárich Chaupán on the boundary of Little Pamir, and the other south-west from Kol Kavijagat [*Kairjagat*?], also called Kol Sikandri, unite below Kila Panjah. The united stream is known by the name of the Panjah River or Oxus, which takes from here a tortuous course to the north-west.

The territory of Wakhán is divided into four divisions:—1st, Sad Ishtarigh; 2nd, Sad Khandúd; 3rd, Sad Ispanj; 4th, Sad Sarigh Chaupán and Pamír. The people of Wakhán designate Sarigh Chaupán as Sarhad (or the Boundary), for here various routes converge from Yásin, Upper Chitrál, Gilgit, and Kanjúd, as well as Eastern Turkistán, and also diverge to these countries.

Route from Sárich Chaupán in Pamir to Yásin, Upper Chitrál, and thence to Gilgit.

1. From Sárich Chaupán to Paikharo.

Uninhabited, and a pass surrounded by a range of lofty hills called Dáwarkot [or Darkot]. Mirwali, the ruler of Yásin, after the murder of Mr. Hayward, fled to Wakhán, after crossing these hills to Sárich Chaupán.

2. Baroghil.
Uninhabited.

3. Zarkah, at the foot of the Shindar hill.
Uninhabited.

4. Yásin.

The capital of Upper Chitrál. Yásin is also known by the name of Vorshigon [*Varchagam* ?]. Ruled by the Khushwaktia Chief, the murderer of Mr. Hayward.

5. Ashkhiab.

Inhabited. Mústoj and Pinjal below and above, but off the road, to the north and south.

6. Ashkamand.

7. Gáokoch.

8. Panjrat.

9. Fort Gilgit.

In possession of the Mahárajah of Jamu and Káshmir.

Route from Sarigh Chaupán Pamir to Kanjúd, otherwise called Hénzu.

1. From Sarigh Chaupán to Mashú.

A hill pass. Uninhabited.

2. Kháldár Shadak.

3. The foot of the Shar Kotal.

4. Bába Ghandi.

5. Rasab Jarab.

Inhabited.

6. Sásat.

Inhabited.

7. Gulmat.

8. Shilk.

9. Fort Kanjúd.

In possession of Gházín Khan, brother of Gházínfar Khan of Kanjud.

Route from Yasin in Upper Chitrál to Káshkár in Lower Chitrál, South-east.

1. Yásin to Ghizir.

2. Lashor [*Jaspúr* ?]

3. Mastoj.

4. Boni.

5. Mari.

6. Káshkár.

These routes go south and south-west from Sarigh Chaupán in Wakhán territory.

I now proceed to describe the route from Wakhán in the direction of Pámir and Eastern Turkistan. There are two routes, one to Little Pámir, south-east, the other to Great Pámir, north-east. Both routes lead to A'k Tásh, the boundary on the termination of the Pámir Steppes subject to Wakhán, and Sárkol in the Yarkand territory, subject to the government of Yakúb Beg Kushbegi. And first,—

The Route through Little Pámir.

1. From Panjah to Os.

Journey through Sas and Oáshkán [*Razkhan* ?], and uninhabited jungle. Os is inhabited.

2. Bába Tangi.

A kotal named Yásian and a rapid stream has to be crossed.

3. Deh Ghulámán.

Inhabited.

4. Sarigh Chauján, known as Srahad.

Here roads diverge to Upper Chitrál, Gilgit, and Kanjúd, as described above. The inhabited portion of the Wakhán territory terminates here. Here there is a spring, the water from which runs into Panjah, a constituted branch of the Oxus.

5. Ab Shor.

Two streams, the Little and Great Ab Shor, have to be crossed in this march.

6. Dasht-i-Langah, or Langar.

The Kotal Márpech, a difficult hill, has to be crossed.

7. Gulab.

Pass through *Siāb Shekh*.

8. Hamdami or Andamin.

Traverse a plain known by the name of the Dasht-i-Mirza Morád.

9. A'k Tásh.

Pass through Kázil Robát, Kunj-bá-i, and Bazár-Darah.

These are nine caravan marches.

Route from Wakhán through the Great Pámir employed by me.

17. From Fort Panjah to Zangobi, 36 minutes.

Proceeded across the river, north-east,* made a rapid march in 36 minutes, and rested for the night.

18. Langar Kish, 2 hours 18 minutes.

From Zangobi, north-east, the village of Zoug [*Zang?*], 48 minutes. From hence again north-east to the village of Kísar [*Hísar?*], 30 minutes. Thence passing through Akhab, Nizgah, proceeded north-east in one hour to the village of Langar Kish. The inhabited part of the country terminated here.

19. Jangalik, 5 hours 15 minutes.

Direction north-east. Crossed Akba Atam and Del Kan Khana, 24 minutes. Thence, north-east to Zarwand, 48 minutes. From thence, in the same direction, the Golain called Ser, 36 minutes. From thence, Dasht-i-Tash, 12 minutes. Here the road turned south-east, and afterwards due east. There is a hill called Uzgawaáran on the bank of the river which flows from Kol-i-Sikandari, as already stated above. From Dasht-i-Tash to Kanpur, north-east, 1 hour. From thence, in the same direction, descended to Ab-i-Zer-i-Zamin; time occupied, 1 hour and 15 minutes. From thence ascended the Kotal, Zer-i-Zamin, in 48 minutes, and arrived at a level spot. Thence to Jangalik, 12 minutes. Encamped at an uninhabited spot on the bank of a stream, under a tops [*i. e.* grove] of the willow, poplar, and chinár trees. The drainage of Jangalik runs from north-west, and then, turning south, falls into the stream here mentioned, along which my way now lay.

20. Jagnalár, 7 hours 10 minutes [6 hours 40 minutes?]

Proceeded due east along the bank of the Mas, a very rapid stream; flows southward, and falls into the river. Went on to Darah-i-Aich-Kar, north-east, 1 hour. Thence traversed the Dasht-i-Kar-glachli, in 1 hour and 30 minutes. Thence, north-east, Roz Neg, 30 minutes. Then to Yol Mazár, 24 minutes. Then, Dasht-i-Ichkalik, 12 minutes; Dasht-i-Páizat Ailah, 15 minutes; Dasht-i-Khargoghi [*Khargoshi?*], north-east, 16 minutes. To the north of this plain is situated the Ab Chár [*Ali Chor?*] Pass, through which a road leads westward to Dasht-i-Mai, Shighnán, Darwáz, and Karát-gin. Southwards from this place goes the road to Sarigh Chauján and Sarhad of Little Pámir. The

[* This seems to imply, as I should also gather from Wood, that Fort Panjah is on the south bank of the river, not the north, as represented in the *Mirza's Map*.]

elevation of the Pámir Steppe commences here. Trees and plants disappear here; grass alone, and a low thorny shrub, similar to that met with on the Hindú Kush and Koh-i-Baba, grows here. Traversed the Boz Yolparas Plain in 48 minutes; then the Shákh Toda Plain, in 30 minutes; and next, the Jagnalar Plain, in 1 hour and 15 minutes, preceeding north-east.

21. *Kair Jagat*, 4 hours 46 minutes.

From Jagnalar to Kosh Chulgha, north-east 1 hour. Thence, Jarat Gumbaz, east, 30 minutes. Then Dasht-i-Shunálgo, 45 minutes. Thence to Kosh Yatak, 48 minutes; thence to Mazár Tippa, 35 minutes. From thence to Besh Gumbaz, 1 hour 8 minutes. From thence to Dasht-i-Kol Hauz Kalán. Halted for the night at *Kair Jagat*, on the bank of a stream which rises in Besh Gumbaz and terminates at Kair Jagat, where it forms a lake, from which the water flows to Fort Panjah, in Wakhán, and runs on to Shighnán. This is the source of the Oxus. This stream is also called the Sikandari stream.*

22. Islgh, 4 hours 6 minutes.

From Kair Jagat to the Plain of Jagdabán, north-east, 1 hour. From thence to Shásh Tippa, north-east, 36 minutes. Thence the Plain of Buzteri, north, 30 minutes. Thence through a level plain to Islgh, 2 hours. The drainage of Little Pámir flows through this place, in a north-westerly direction, to Darwázah.

23. A'k Tásh, 8 hours 28 minutes [8 minutes?].

Traversed the Islgh Plain, north-east, in 1 hour. Thence south-east, through the Sunoghar Plain, 48 minutes; then through the Atárbel Plain, 14 hour, north-east. From thence to Kazli Babát, east, 36 minutes. Thence through the *Hayála* Plain, 24 minutes. Thence to Dúngkul-duk, 1 hour 15 minutes. From thence to Bazár Darah, north-east, 35 minutes. Thence to Kotal A'k Tásh, north-east, 48 minutes. From thence to the bank of the A'k Tásh stream, 1 hour and 12 minutes.† This stream is formed by the drainage of the several passes, and, uniting with the drainage of the Kanjúd Darah, flows towards Karát-gin, Kuláb, and Hisár, and falls into the Oxus. The River Oxus is formed, out of Pámir, by five streams, viz., the Iskandar stream, already mentioned, which goes to Panjah; second, Sarkhan [*Surkháb?*]; third, *Bagash*, or *Vakhasht*; fourth, Kafir Nihan; fifth, Tofláng [*Tupalak* of maps]. The main river composed by the union of these streams is then called the Oxus. In addition to these streams, the following are also its feeders, viz.: Kúkeha, or the Badakhshán River, which falls into the Oxus at Khoja Ghár; the Kahmard, Bamíán, and Hazáraját streams, which descend from the Koh-i-Bába and Hindú Kush Mountains, as also the Kunduz Ghori, Talikán, and other streams. These form the full volume of the Oxus at Kubádíán.

24. A'k Tásh to Robát King Sher, 10 hours 34 minutes.

From the bank of the River A'k Tash to A'k Tásh Robat, north-west, 45 minutes. Thence to Kotal A'k Tash, north-east, 36 minutes. The Kotal

* This Hauz Kalán, "Great Pool," or Kol-i-Sikandari, is Wood's Lake Sirikul or Victoria].

† To the west of A'k Tásh there is a kotal, named Kosh Akbad, a very lofty mountain, across which, to the south-west, is situated Karát-gin. The boundary of Pámir in Wakhán territory subordinate to Badakhshán terminates at A'k Tásh. The Amir of Kábul now levies tribute on all the possessions of Badakhshán. His Highness's dominions, therefore, virtually terminate here. The roads from Great and Little Pámir unite here.

• Thus—

Rusták	10,000
Faizabád and its dependencies, including Wakhán	50,000
His Highness realized 60,000 rupees in all in 1870.	

Ak Tash is drained through the Darah Shandi, within which there are several open valleys, called here Tagáos; first, Tagáo, 30 minutes; second, south-east, 1 hour; third, 1 hour 15 minutes. Then to Kotal Shandi, north-east, 1 hour 30 minutes. The drainage of all passes now flows in the direction of Sárkol and Yarkand. The descent of Kotal Shandi to Darah Hák Sherak, north-east, 2 hours. Thence to Niza Tásh, 1 hour and 14 minutes, north-east. There is a valley here which runs north-west, and its drainage, uniting with the drainage of the Shandi Darah, flows on towards Sárkol. From Nizatásh to Darah King Sher, 1 hour 9 minutes. Thence to Robát King Sher, north-east, 35 minutes.

25. Sárkol, 4 hours 58 minutes.

From Robát King Sher to Kara Koram Plain, 1 hour 45 minutes. Thence to Tippa Kara Koram, north-east, 15 minutes; thence north to Jangalk. The willow and poplar trees were in abundance here; the wind was hot. From Jangalk, north-north-east, to the mouth of Tangi Sárkol, 2 hours 13 minutes. From thence to Fort Táshkurghán, east, 45 minutes. This fort, or rather its lands, are situated in the Sárkol Plain. There is a tradition that the fort was built in ancient times by Afrasiáb. But the ruins are of a more recent date.

Kul, in Turkish, means centre; *kol*, a valley more long than broad, surrounded by hills; *kol* also means hand. *Kul* means slave. *Kul* (the *k* sounding as in the English word "king") means a lake. *Sarikol* means the head of a valley, and, in fact, it is the head of the long valley in which the fort of Táshkurghán is situated.

From Sarkol two routes lead to Yarkand, the first across the Kotal Oghar Yár, or Aigáz Yar, south-east; the second inclining to the north, known by the name of Tagharma Route.

The First Route (South-east).

1. From the Fort Táshkurghán, in Sarkol, to Kotal Oghar Yár.
2. Darah Vachelia.
3. Kotal Khandhari. An extremely difficult mountain.
4. Kila Mir Babásh. The drainage of Darah Tung and the Kanjúd Mountains flows to this place.
5. Langar Latif Shekh.
6. Kotal Aríb Ailak [*Arpatallak*?].
7. Ozil Dur.
8. Urtang Kusharáb.
9. Yarkand.

In all of the caravan marches, owing to the difficulty of crossing the kotala, and the abundance of water in the summer months, this route is less frequently employed, until the waters subside. The people of Wakhán and the Khirghíz people convey loads on horses and yáka.

The Second Route (North-east).

1. From Sarkol to the border of the Tagharma Plain.
Pass through Tazníf, Chashmáu, Dahána Tagharma, and encamp at the border of the plain.
2. Chicháklék.

Two roads come here from Tangtár and Aghíl, and unite at Bús Rabát. There is also a road which runs past Aghíl to Tangtár. Another road goes from Aghíl, inclining more to the north, to Kotal Yám Bolák, and goes on to Bús Rabát.*

[* This paragraph is not very intelligible, but I do not venture to correct it. See stage 27.]

3. To Bās Rābāt.

The roads through Darah Tangtār and Chichaklek unite here.

4. Chil Gumbaz.

Two roads diverge from this place; one direct east, through Darah Charling, to Yarkand; the other, known by the name of the Kotal Kaskaso, north, to Yang Hsār. The direct eastern route is described here.

5. Darah Charling.

Pass through Bāgh-i-Mirza Khān.

6. To the foot of the Kotal Taka Sikrak [*Sikrik?*].

7. Kazīl Dawān.

Pass through Kara [*Kisil?*] Dawān.

8. Dara Yalghoz Targhāk.

Pass through Dahana Kotal, Bel Kuram, and Abshor.

9. Ortang Yang Arigh.

Traverse the extensive Dasht-i-Shaitāngum.

10. Yarkand.

These are caravan marches, whose cattle carry about 3 maunds weight. A horseman, without encumbrances, can make the journey in five or six days.

From Sarkol to Kāshgar, and from thence to Yarkand, the way by which I went.

26. From Sārkol to the mouth of Tagharma, 2 hours 43 [13?] minutes.

To the ruins of the village of Tazniff, north-west, 47 minutes. Thence to the ruins of Chasman Kashiāk, in the same direction, 30 minutes. Thence across the Tagharma stream, 56 minutes.

27. The Chichaklek Plain, 6 [5?] hours.

Leave the Tagharma Plain on the right. To the north-east of this plain, there are two roads leading to Chichaklek and Tangtār respectively. Both unite at Bās Rābāt. It winds by the Chichaklek route. To the north-west of Tagharma is situated Karāsū, and north-north-west Kotal Bardāsh, from which a road goes to Pamir.

From the mouth of Tagharma, north-east, to Aghil, 1 hour. From here a road leads through a pass, south-east, to Tangtār. From Aghil to Darah Chichaklek, 2 hours; delayed, owing to fall of snow. Thence to the plain of Chichaklek, 2 hours.

28. Bās Rābāt, 7 hours [and 30 minutes?].

To Yām Bolāk Darah, north-east, 2 hours 30 minutes, then across the snow-covered Kotal, north-east. Three hours occupied in going to Yām Bolāk, inhabited by the Kirghiz, who live in black tents. Thence to Bās Rābāt, 2 hours. The drainage of Kotal Bolāk, known by the name of Karā Kol, flows in the direction of Yang Hsār.

29. King-kol, 9 hours 21 [48?] minutes.

From Bās Rābāt to Kashiāk, north, 48 minutes. Thence to Tagao Has Rābāt, north-east, 2 hours. Thence to Darah Chil Gumbaz, 37 minutes, north-east. Thence to Kotal Chil Gumbaz, also north-east, 30 minutes. Thence across the Kotal to Chil Gumbaz, * 45 minutes.

From this place there are two routes, one called Darah Charling, which goes due east to Yarkand, which has been already described above. The other route goes *viā* Kotal Kaskas to King Kol. I adopted this route. From Chil Gumbaz, due north to Kaskaso Darah, 1 hour 38 minutes. The Kotal Kaskaso, 2 hours. Thence to Darah Kingkol, north-east, 1 hour and 30 minutes.

30. To A'k Tala, 5 hours 22 minutes.

[* The *Chihil Sitān* of the Mirza, whose route this now is.]

From King Kol to the mouth of the Azzalk [*Arzalek?*], north-east, 1 hour. Thence to the mouth of *Pakhtanan*, north-east, 1 hour. Thence to Koh Chaghi, 2 hours 22 minutes, north-east. Thence to A'k Tala, in the same direction, 1 hour.

31. Sugat, 6 hours 26 minutes.

To Kazkia, north-north-east, 1 hour 30 minutes. To Kachik Karával, north-east, 1 hour 26 minutes. To Katta Karával, one hour and a half. To *Aigri Jar*, north-north-east, 1 hour. To Sugat, 1 hour.

32. To ruins of the Fort of A'k Bâsh Khan, Bazar Châr Shamba, 7 hours 48 minutes.

From Sugat, north-west, to the village of Karâbâsh, 2½ hours. To Yang Hisâr, north, 48 minutes. To *Hang Kutlak*, north-west, 36 minutes. To *Kush Ozma*, one hour and a half. To Chol-Sâ-i, 35 minutes. To *Zoma*, north-west, 19 minutes. To *Kona Sak*, same direction, and thence to A'k Bâsh Khan, north-north-west, 1½ hour.

33. To Yangi Shahr, Kashgar, 10 hours [and 33 minutes].

To the village of Yaghâch Ayâgh, north-north-west, 1 hour 41 minutes. To Aktar, 1½ hour. To Parâsh or Parach Suddik Bey, a Kirghiz village, 2 hours. To Dasht-i-Pukâlik, north-north-west, 1 hour. To Nahr Tâzghon, in the same direction, 48 minutes. To Karâsd, 36 minutes. To Dâ'id-Maidân, 1 hour. To Kajarchi, half-an-hour. To Yangi Shahr Kâshghar, north-north-west, built by the Chinese, now one of the two capitals of Yâkuh Beg Kushbegi, 48 minutes.

The Kushbegi has had the road measured from Kingkol, according to the Mahomedan standard, according to which 4000 paces of a swift camel make a mile, and 12,000 paces (equal to three miles) one farsakh.

From King Kol to the mouth of Arzalek, one farsakh. From thence to the mouth of Pakhtanan, one farsakh. To Ghuzam, one farsakh. To Koh Chaghi, one farsakh. To A'k Tala, one farsakh. To Kazkia, one farsakh. To Kachik Karával, one farsakh. To Katta Karával, one farsakh. To Yang Hisâr, five farsakhs. From thence to Kâshghar, nine farsakhs. From Yang Hisâr to Yarkand, 27 farsakhs.

[Return from Kâshghar.]

34. To Yafchan Bâla, 4 hours 30 minutes.

To Nahr Tâzghon Talta Bazâr, south-east, 3 hours. To Yafchan, south-east, 1½ hour.

35. To Yang Hisâr, 4 hours 54 minutes.

To Ortang Sarkâri, south-east, 1 hour 30 minutes. Thence through the Yafchan Plain to Langar Saklik, 1 hour. Thence to the Tangi Buz Plain, 36 minutes. To Langar Khank'ah, 1 hour. To Yanghisar, south-east, 48 minutes. To the north-east of Yang Hisâr are situated the villages of Soilik and Sitla, and, to the south-west, Sugat, Bolak, and Tairâk.

36. To Kazili, 5 hours 5 minutes.

To the village of Karâbâsh, 24 minutes, south. To Gullun Babât, south-east, 1 hour 15 minutes. To Tâplik, east, 38 minutes. To Kush Gumbâz, 42 minutes. To Tâimizi, 36 minutes. To Chulinan, south-east, 30 minutes. To Kazili, 1 hour.

37. To Kok Rabât, 5 hours 15 minutes.

To Kok Rabât, uninhabited. But Yakûb Beg has built a mosque and a cookhouse there.

38. To Yarkand, 5 hours 33 minutes.

To Darg-sa-i, 1 hour 15 minutes. To Chârik, 2 hours. To Karâdâsh, 15 minutes. To Sagbehak, 48 minutes. To Yarkand, 1 hour 15 minutes.

I commenced my journey from Peshâwur, from whence I proceeded west-

* There is a strong sand fort here built by the Chinese, to check attacks from the hills.

ward to Kábul; then north to Khulam, in Balkh territory; then north-east to Badakhshán; thence in the same direction to Káshghar, one of the two capitals of Eastern Turkistán; thence south-east to Yárkand, and again in the same direction travelled back to India. The distances are as follows:—

Pesháwur to Kábul, 12 marches.

Kábul to Khulam, 12 marches.

Khulam to Kunduz, 12 *farsakhs*.

Road lies through a dry waterless plain, already described in the list of routes.

Kunduz to Badakhshán and Wakhán, 13 marches.

The country throughout is well inhabited. The road goes through mountain passes, which are well wooded. Supplies, &c. for travellers and caravans procurable everywhere. From Badakhshán to Yárkand baggage cattle cannot be obtained on hire, but must be purchased. No difficulty of any consequence is, however, met with in purchasing cattle. From Langar Kish, one march beyond Kila Panjah, the capital of the Wakhán territory, the country is uninhabited as far as Sarkol in Eastern Turkistán; grass and firewood alone is obtainable. All other necessities for man and beast must be carried by the traveller. At Jagnalár the chain of lofty mountains is terminated, and the elevation of the Pamir Steppes commences here. No trees are visible beyond Jagnalár. The Pamir Steppes connect several chains of mountains, viz. the Hindú Kush, in the south-west; the Kuen Luen, in the east; the Kara Koram, in the Polar; the Thián Shán chain, in the north, which runs from Tirak Dawan, and Ming Yöl, to the Western Farghána Pass. According to native geographers, the Thián Shan chain, which commences north of Eastern Turkistán, belongs to Mongolistán, which, commencing north of Káshghar, runs westward of that place, and, running on southwards, joins the Kara Koram and Kuen Luen chain in the south-east of Pamir. Here it branches off in two directions; one branch goes into the Chinese Empire, passing to the north and north-west of Tibet (this may perhaps be Kuen Luen). The other great branch runs on to the ocean, passing north and north-west of the Punjáb and Hindústán, and south and south-west of Tibet. This is probably the great Himalaya chain of mountains. The Turkistán geographers call Polar by the name of Polar Tagh, and state that the Oxus rises in those hills. In the Turkish language *Ták* or *Tagh* (*gh* and *k* being exchangeable) means a mountain—*Bilúr* means crystal. The name may perhaps have been given owing to the perpetual snow on the lofty peaks presenting the appearance of crystal. Another tradition gives the name as *Bulut Tagh*, which means mountain of clouds, and on the summits of these mountains clouds are always present. By constant use the name may have been changed into *Bilúr Tagh* by the Turks. On the whole, it appears certain that the Turkistán territory is surrounded on three sides by the same chain of mountains.

The author of '*Tárikh-i-Rashidi Gházán Khan*,' namely, Khowaja Rashid-ud-din Wazir, and Mirza Haider Káshghari, the author of '*Tárikh-i-Rashidi*;' and Khowaja Ata-ul-Mulk Juvaini, the author of '*Tárikh-i-Jahán Kushá*,' state unanimously that the western portion of the Káshghar territory is designated the Dasht-i-Alai, which is the table-land of *Bilúr Ták*, similarly with the Pamir Steppes to the west of Yárkand. It is explained that the chain on three sides, described above, is one and the same. The portion between Káshghar and Farghána is called Alai and *Bilúr Ták*; that between Badakhshán and Yárkand is designated Pamir, or *Páni-i-Dunya* (roof of the world), and the portion between Akha Sanju and Iskardú is designated Balti, which belongs to Little Tibet. I have not at present the means of comparing the old geographical names of Eastern Turkistán with modern names. I am unable, therefore, to deduce any results. The names given by Marco Polo I am unable to identify. As I am at present only describing the routes, I proceed to describe the Pamir

Steppes. Pamir is designated Bám-i-Dunya (roof of the world) from its altitude. Its great elevation is proved by the fact of there being no trees in it and the scarcity of birds. Grass only grows there in summer. The air is extremely rarefied, so that respiration becomes difficult both to men and beasts. This difficulty of respiration is termed "*tunk*" by the people of Badakhshán and Wakhán, and "*ais*" by the Moghals. The liver and stomach become irritated. The travellers get headache, and blood flows from the nose. In the case of men of weak constitutions, the face as well as the hands and feet become swollen. The greater the cold, the more marked are those affections. The people of Badakhshán and Wakhán use acid, dry apricots, and plums, to check those affections. At night, if the head of a man should not be two feet higher than the ground inclining towards his feet, respiration is checked in sleep. Both pedestrians and horsemen experience difficulty of respiration. I am now in the 34th year of my age. On one of the peaks of Pamir I counted my pulse beat 89 times in one minute. I got headache, and felt irritated in the liver and stomach; once blood also flowed from my nose. One of my attendants, named Kádír, a native of Peshawur, was 27 years old; he had an attack of fever, experienced difficulty in respiration, and irritation of the liver, and his face and extremities got swollen. His pulse beat 99 times per minute. I had another attendant, named Mehra, a native of Ghizni, 20 years of age; he merely felt a little difficulty in respiration; his pulse beat 75 times in one minute. Rich food increases difficulty of breathing.

In the Pamir Steppes, the ground is mostly moist and covered with saltpetre. There are no stones. The altitude of Pamir would appear to be higher than the Hindu Kush, from the fact that difficulty of respiration is not experienced on the latter mountains. The soil is generally with a mixture of sand. The air becomes extremely cold in the end of October, and grass dries up and presents the colour of copper; snow begins to fall on the lofty peaks. The temperature changes in the end of March, and the snow begins to melt in the lower valleys. In April, grass begins to spring up. In June, water becomes plentiful, and the streams swell to such an extent that traffic is checked. From July to October, traffic is easy. In July and August, grass is abundant; it begins to decrease in September. In low places, the grass grows very dense, and to a height of from two to three feet. This grass is very nutritious; cattle prefer it to grain, and fatten on it, but it makes their stomachs stink.

The lofty peaks of Pamir are covered constantly with snow. The following animals are found in Pamir, viz. the deer, the *kuchkár* or wild sheep, the yák, called *kotás* or *khásh gáo*, the fox, the jackal, the bear, the hog, and the tiger. The *kuchkár*, which in the Turkish language means "snow sheep,"* is a remarkable animal. It cannot live without snow, and inhabits the snowy peaks. In summer, their skeletons and horns are met with lying on the ground, everywhere. The horns are beautifully turned. The interval between the two horns is such that they cannot be encircled by both arms of a man. A fox may sleep in the hollow of the horn. In snowy weather the people of Wakhán place the horns as marks, to indicate the road. There is a spot in Pamir, designated Khak Toda, where these horns are found in great abundance. The horn is employed in the manufacture of hukkas, bowls, handles of knives, ammunition pouches of soldiers, and many other articles, as in England. It presents a white appearance by being polished. It is stated by Mir Mahomed Shah, of Badakhshán, and Mir Sultan Murád Beg, of Kunduz, that during the period of the occupation of Kábul by the British, a traveller (perhaps Moorcroft, or Burnes, or some other gentleman) carried away the horns of the *kuchkár* from Pamir, and sent them to England. If this be correct, they will probably

* [*Kách*, "a ram;" *ár*, "snow."]

be traceable in the London Museum.* The soldiers of Mir Fatah Ali Shah, Mir of Wakhán, who composed my escort, stated to me that, in 1869, a murrain occurred among the kuchkars, which killed flocks upon flocks of them. The atmosphere of Pamir was filled with stench on that occasion. I saw the skeletons and horns of these animals in abundance scattered on the ground. If two armies were to meet in that plain, such was the number of skeletons and horns which I saw, that entrenchments could be made with them. I did not attempt to bring any of the horns as curiosities, lest any suspicion should be raised in the minds of the people.

Before twenty years ago, the Kirghiz subjects of Yárkand, Káshghar, and Farghána, used to migrate in summer into Pamir, to graze their camels and yaks. These migrations have now ceased, owing to the attacks of the people of Shighnán and Kanjud. The names of portions of the Pamir Steppes, as well as the graves of Kirghizes in those steppes, attest the fact that Pamir was the dwelling-place of the Kirghizes. The Pamir Kirghizes have now removed to Kotál Gandhári and Kálián, in the Sarkol territory, and west of Sanju. The Alái Kirghizes, who used to migrate to Pamir, have returned to Dasht-i-Alái. A few families of the Wakhán people have also removed with the Kirghizes to the neighbourhood of Sarkol, Kálián, and Sanju. The Pamir soil terminates at Ak Tash; it belongs to Mir Fatah Ali Shah, the Mir of Wakhán, who is subordinate to Mir Mahmúd Shah, the Mir of Badakhshán, who, again, is a feudatory of the Amir of Kábul. The Amir, last year, realised 50,000 rupees as tribute from Mir Mahmúd Shah, in which sum Rs. 800 was included as the portion paid by Fatah Ali Shah, the Mir of Wakhán. In addition to this sum of 50,000 rupees, Rs. 10,000 were levied on account of Rusták, a dependency of Badakhshán, lying to the south-east of the Oxus, opposite to Khatlán. A road from Shighnán and Karatgin and Darwáz enters Pamir from the south-west. Other roads enter Pamir from Kanjud, Baskain, Tághdum-Básh, and Bálti. The Turkish people are divided into 92 tribes, of which the Kirghiz is one; their origin is unknown; the original name was Kirkíz, which, in accordance with Turkish usage, has been altered to Kirghiz, *k* and *gh* being exchangeable in that language. The original stock was borne by forty women, whose father was unknown. The Kirghiz tribe are subdivided into 32 sections.† They inhabit chiefly Kokán, Talas, Minatí, Alái, and the neighbourhood of Kálián and Sanju. Those of the Kirghizes, who own submission to a settled government (*e.g.*, the Kokán Minatí, Kálián, and Sanju Kirghizes) are more civilized, hospitable, and polite in manners. On the other hand, the

* [It was Capt. Wood. The horns are in the R. As. Soc. rooms; see 'Marco Polo,' i. 166.]

† The following are the names of these sections:—

- | | |
|-------------------|-------------------|
| 1. Kip-chák. | 17. Turt Aghír. |
| 2. Fái-it. | 18. Sayak. |
| 3. Bostán. | 19. Garbaghish. |
| 4. Kara Bighish. | 20. Yásh Síz. |
| 5. Jun Baghish. | 21. Kul Chighásh. |
| 6. Charyak. | 22. Bitelchi. |
| 7. Baghon. | 23. Sálata. |
| 8. Kúrbán Khojah. | 24. Chará Yakehi. |
| 9. Kataghan. | 25. Kara Sádín. |
| 10. Moínák. | 26. Turkmán. |
| 11. Bolok Bal. | 27. Simíz. |
| 12. Kizil Ayágh. | 28. Sátga. |
| 13. Mashka. | 29. Durman. |
| 14. Niman. | 30. Alkár. |
| 15. Otzol. | 31. Chatkál. |
| 16. Kaltatíl. | 32. Yamghál. |

Altai Kirghizes, who are independent, are cruel, savage, and ferocious, and addicted to selling slaves. Their food consists of the flesh of horses, camels, and sheep, and curds and barley.

The people of Wakhán, and their Mir or Chief, are of the Hazárah tribe; * such of them as own allegiance to the Chief enjoy some degree of civilization, but they are extremely avaricious, and given to theft. Those who are not subject to the Mir are merciless, ill-bred, wicked, and professional robbers.

The people of Kanjúl, neighbours of Wakhán, are also of the Hazárah tribe. * They are habitual thieves and robbers, and merciless and ferocious. They are addicted to selling slaves.

Mir Fatah Ali Shah, the Mir of Wakhán, and his Hazárah subjects, are Tartars [?]. They profess the Shia creed. They state that the original name of Pamir was Pái Amír, or *Pái Mir Hazrat Ali*, who is called by them Amír or Mir, having placed his foot here. This appears to be a religious hallucination of these men, Hazrat Ali never having, so far as history relates, come to these regions.

Another version is that Pamir was originally Pái-Mehr (Foot of the Sun), and was so called owing to the situation of Pamir to the east of Badakhshán.

One Kirghiz states that the original name was Bám Yar; Bám, Persian, meaning roof, and Yar, Turkish, the earth. The combination of a Persian with a Turkish word is explained thus: He states that formerly a fair used to be held in summer in Pamir, where the Kirghizes were settled in large numbers, which was resorted to by the people of Badakhshán, whose language is chiefly Persian and less Turkish, and who bartered their goods there for camels, butter, felts, and blankets of the Kirghizes; and the association of Persian and Turkish-speaking people is sufficient explanation of a Turkish having been combined with a Persian word. In course of time it came to be called Pamir. The origin of the word is, on the whole, doubtful. The name is mentioned as Pamír by Marco Polo.

The Pamir Steppes are not so intensely cold, or so lofty and difficult, as some of the heights between Lé and Yárkand, over which Mr. Forsyth and his camp followed.

It has been stated above that the Pamir territory is terminated at A'k Tásh. Two marches beyond A'k Tásh is situated the fort of Sarkol, which belongs to Mahammad Yakub Beg Kushbegi, the ruler of Eastern Turkistan. Between A'k Tásh and Sarkol there is a lofty kotal, called the Shindi Kotal, the summit of which is constantly covered with snow; greater difficulty of respiration is experienced on this hill than in Pamir. The route from Sarkol to Kashgar and Yárkand has been already described. At Sarkol there are ruins of a fort, which is said to have been built by Afrásiáb. But the ruins are, in point of fact, of recent date. The population of Sarkol consists of the Hazaras [?], whose language, like that of the people of Badakhshán, is neither pure Persian nor pure Turkish. They profess the Shia creed.

The drainage of all the Sarkol and Shindi passes flows in the direction of Yárkand and Yang Hiaír. The Sarkol River flows past Taznif towards Yárkand. In the second march from Sarkol there is a lofty hill, called Chichák Lek, which is constantly covered with snow. To the north of the descent of this hill there is situated a lake, from which a stream flows in the direction of Yang Hiaír. In the third march from Sarkol there is a lofty kotal, named Yám Bolák, the peaks of which are always covered with snow. On this hill, also, great difficulty is experienced in breathing. On the 23rd August there was a fall of rain and snow at Sarkol. On the 25th of August,

* [The statement cannot be accepted. But it is not clear what the writer understands by Hazárah.]

a fall of snow alone at Chichaklek. And on the 27th August, a heavy fall of snow on Yám Bolák, accompanied by a wind storm. The temperature changed very perceptibly after we descended on the plain below Yám Bolák. The feeling was that of a man in Kábul, in winter, walking into a warm bath after exposure to snow and rain. The temperature was the same as far as Yárkand.

The nights began to get cold in Yárkand on the 10th of September.

I arrived and joined the mission at Yárkand, after visiting Kashgar and Yáng Hisar, on the 4th of September; and on the 5th of September Mr. Forsyth left Yárkand on his return to India, I was left behind in Yárkand to arrange for the conveyance of the *Toshakhana* of the mission, but I joined Mr. Forsyth's camp at Sanju. I returned to Murree on the 29th of October.

The route from Yárkand to India has been described by European gentlemen of ability who accompanied the mission; I cannot presume to give any description. In the route by which I proceeded, the following languages are spoken by the people of the countries through which I travelled, viz., Afgháni, Turkish, Sanglichei, Ishkákshmi, Shighnání, Rusháni, Mnugi, Káfiri, Wakháni, Chitráli, Sarkoli. I will separately submit a vocabulary of these languages.*

It is extremely to be regretted that the European gentlemen and natives who proceeded to foreign country in 1870 failed to succeed in the objects which they had in view. Owing to the absence of Mahammad Yakub Beg Kushbegi from his capital, the mission failed in its objects, and, as its return could not be delayed, it was not practicable to collect any information regarding geography or commercial and other statistics.

Mr. Hayward, the Agent of the Royal Geographical Society, was murdered, together with his attendants, at the instigation of tyrants in Upper Chitral.

My left eye has been injured by the reflections of the sun's rays from snow and saltpetre on the ground.

During the period of the journey of the mission to Yárkand, a European traveller, who possessed maps, instruments, and medicines, and professed himself to be a Greek, and called himself Peters or Petros, arrived at Kashgar, having travelled from Kábul through Kunduz, Badakhshán, Wakhán, Pamir, and Yáng Hisar. He was immediately placed under restraint on arrival at Kashgar. It is a pity that there was not sufficient time available to collect information regarding the countries through which I travelled.

My history of Badakhshán and Balkh is being translated. The materials which I have been able to collect regarding the geography, and history, and commerce of Eastern Turkistán, as well as Upper and Lower Chitral, will be compiled and submitted hereafter. The object, at present, being only to describe my route, I here conclude this paper.†

FAIZ BUKSH,
Moonshee.

3. Notes regarding *Bolor*, and some other Names in the Apocryphal Geography of the Upper Oxus.

THE greater part of this paper was already written, and had been announced to the Assistant-Secretary of the Royal Geographical Society, before I saw the

* [A correct vocabulary of these languages and dialects would be of the highest interest.]

† [It would be desirable to communicate with Mr. Forsyth regarding the additional papers.]

Letter of Mr. Shaw dealing briefly with the same subject, and throwing an important new light upon it, as regards the application of the name of *Bolor*, by the Kirghiz, to Chitral. (See 'Proceedings of the Royal Geographical Society,' 13th May, 1872.) Having that new light, I have, of course, not neglected to benefit by it. But the most important part of the paper is that regarding the Jesuit Surveys, and this is, I believe, quite new.

For a long time the name of *Bolor* has had a prominent place on the Map of Central Asia, both as a name applied to the mountains which form the buttresses of the Pamir Plateau, and as that of a town and mountain-state nearer than any other to the sources of the Oxus. And though the advance of knowledge, slow indeed regarding those regions, has never brought us any satisfactory authentication of the existence of such a name or state in the locality assigned to it, these have retained their place with an astonishing vitality.

Major-General Alexander Cunningham was the first to throw light on the true application of the name, when he told us that *Bolor* was the name used by the Dard races on the Indus for the state of Balti, or Little Tibet, on the upper waters of the same river. This information, if thoroughly followed out, ought perhaps long since to have put an end to imaginary *Bolors*; but the old prepossessions, and the quasi-evidence that they had created, were too strong for most geographers. Even M. Vivien de St. Martin, whilst accepting General Cunningham's hint for the determination of the *Paloto* or *Bolor* of Hwen Thsang, with whose indications it is in perfect accord, recurs to the old *Bolor Geographorum*, west of Pamir, as a probable explanation of the name *Puliko*, given by the Chinese Pilgrim to one of the smaller states of Tokharistan. And a much humbler geographer—the present writer—could not bring himself till recently, entirely to reject the old view as unfounded. Mr. Arrowsmith's Map of Central Asia (1834), which helped to maintain the imaginary *Bolor*, was published years before the appearance of General Cunningham's 'Ladak' (1854). But Kiepert's large 'Asia' (1864), as well as a more recent map by Berghaus, makes *Bolor* or *Belur* figure prominently in the old position, and Keith Johnston's 'Royal Atlas' does the same.

Let us trace, as far as my very scanty facilities will permit, what the genuine evidence is as to the locality of a region bearing the name of *Bolor*, and on what foundation rest those erroneous notions of which I have spoken.

The first precise application of the name is, I believe, that in Hwen Thsang, whose travels in India extended from A.D. 629 to 645, and who mentions *Bolor* both on his entrance to India and when leaving it.

On the first occasion he visits *Paloto*, or *Bolor*, reaching it from Peshawur, through the now little-known regions of Swat and Darail. He describes the kingdom as lying on the Indus, and in the heart of the Himalya: it had a circuit of 4000 *li*, and stretched in length from east to west, &c. Again, on his return-journey, when traversing Pamir, apparently by the route lately followed by Major Montgomerie's Mirza, he remarks incidentally that, beyond the mountain-range to the south of his route lay the kingdom of *Bolor*, where so much gold and silver were got.*

The indications in these two passages agree thoroughly with one another, and with General Cunningham's explanation, allowing merely that *Bolor* included Gilghit and Kanjut, as well as Balti. And the name is used in what seems the same sense by other and earlier Chinese pilgrims.†

The same application of the name, under a slightly different form, is found in the Chinese Annals of the Thang Dynasty in the eighth century. These speak of two kingdoms which lay due west of Tibet, called Great and Little

* 'Pelerin Boudhique,' ii. 150; iii. 200.

† Under the form *Potuhri*; see the mission of Sung-yun in Mr. Beal's 'Fah-lian,' p. 187.

Polu, *Polo*, or *Pulu*, Little *Polu* being the most westerly of the two. The King of Little *Polu* lived in a city which the Chinese call *Nieto* or *Nita*, on the River *Soi*; to the westward of this there was another city on a hill, called *Kiapulo*. Abel Rémusat, from whom I derive the quotation,* has strangely confounded these *Polu* with the *Puruts* or Kirghiz of the mountains above Kashgar. But there can scarcely be a doubt that here Great *Polu* is *Ladak*; Little *Polu* is *Balti*; the *Soi* is the *Shayok*, and *Kiapulo* is *Khapalu* or *Khapolor*, on the *Shayok*, which Cunningham appears to regard as having been the nucleus of the old kingdom before the rise of the Mahomedan dynasty in *Skardo*.

The next mention of *Bolor* that I find is in *Al-Birûni*, in the eleventh century. "West of *Kashmir* are several kings, of whom the nearest is *Balûr Shâh*, and then *Shaknân Shâh*, and *Wakhân Shâh*, till you reach the frontiers of *Badakhshân*." A little further on he speaks of the *Indus* as rising on the Turk frontier, and flowing past the mountains of *Balûr* and *Shamshân*.† This is still quite in accordance with Cunningham's explanation.

Balûr appears in the *Tables of Nasruddin of Tûs* (circa 1260) with the longitude of 108° , and the latitude of 37° . The Mahomedan latitudes and longitudes are generally far too loose to be guides, but the position assigned by these co-ordinates would be due north of *Balti*, between that and *Tash-kurghân*.

The next mention that I am aware of is *Marco Polo's*. He says the wild country that he passed through, after leaving the high plain of *Pamir*, and before reaching *Kashgar*, was called *Bolor*. Since the publication of the *Mirza's* journey, we see that *Marco Polo's* route was probably the same as the *Mirza's*, or nearly so; i.e., not by *Wood's Lake*, but by Little *Pamir*, and by *Chichiklik-labân* to *Kashgar*. The country which he calls *Bolor* will therefore be that to the north of *Balti* and *Kanjut*, included in *Sirikol*. *Rabbi Abraham Pizol*, quoted by *Kircher*, but whose date I do not know, apparently makes *Bolor* and *Tibet* the same.‡

Bolor is noticed more than once in *Quatremère's* extracts from the '*Târikh Rashîdî*,' a work written in Eastern *Turkestan* in the sixteenth century by a Prince who was cousin of the great *Sultan Baber*. This work relates that *Mirza Abu-bakr* of *Kashgar* (about A.D. 1515) sent an army into *Tibet*, and subdued it to the frontier of *Kashmir*. He then conquered the province of *Balûr*, and subjected the *Hazâras* (or hill tribes) of *Badakhshân*. Again, we are told (A.D. 1526) *Sultan Said Khân* of *Kashgar* sent his son, *Rashîd Sultân*, to carry war into the infidel country of *Malaure*, of which the writer says, "This is a country with few level spots. It has a circuit of four months' march. The eastern frontier borders on *Kashgar* and *Yarkand*; it has *Badakhshan* to the north, *Kabul* to the west, and *Kashmir* to the south." This author knew what he was speaking about, and it would seem that he included under the term *Balûr* or *Malaure*, not merely *Balti* and *Kanjut*, and perhaps *Sirikol*, but the whole of the *Dard* country, and possibly the whole pagan country south and south-east of *Badakhshan*, including, of course, *Chitral*.

* 'Mém. de l'Acad. R. des Inscriptions,' tome viii. pp. 100-102. *Klaproth* has made the same confusion ('Mag. Asiat.' i. 114).

† *Reinaud*, 'Fragments arabes,' pp. 115, 117.

‡ *Kircher*, 'China Illustrata,' p. 49. "Regnum *Bolor* magnum et excelsum ulma sunt in eo Judæi plurimi inclusi et sunt adhuc populi alii orientales non ita pridem detecti in eodem Regno: vocant eos indigenæ *Tebeth*." This passage accounts for the position assigned to *Balûr* in some sixteenth-century maps, viz., in the N.E. of *Asia*, where *Alexander* was believed to have shut up the *Jews* with *Gog* and *Magog*. (Perhaps *Pizol* is the same as *Peritoul*, whose *Travels* *Hyde* translated, but I cannot now refer to the book.)

A Pushtu poem of the seventeenth century, translated by Major Raverty, in speaking of *Swat*, west of the Indus, alludes to the country north of it as *Bilaur-istdn*, i. e. Bolor. This might apply either to the Dard country or to Chitral.

In the beginning of last century the name of "*Belûr Tagh*, or Dark Mountains," found its way into Geography as synonymous with the (northern) *Hmaus* of Ptolemy, and the *Tsanglung* of the Chinese. As far as I can trace it was introduced first in the maps of De Lisle, but whence it came I do not know; perhaps from Abulghazi,* the French version of whose history was published in 1726. The assigned meaning of the name finding, apparently, no justification, various attempts have been made to amend its shape into *Belûr Tagh*, *Bouly Tagh*, and what not; and the term *Belûr Tâgh* has often been quoted and used as a genuine term of Oriental Geography, though I believe the sole foundation for its existence is a conjectural emendation of *Bolor* by Mountstuart Elphinstone.†

In reality *Bilaur* or *Bilûr*, "Rock-Crystal," the word from which we seem to have our *Beryl*, is probably the genuine form of the name. According to the Buddhist Cosmography, the River *Sita*, which Hwen Thsang seems to identify with the river of Yarkand, issued from a lion's mouth of *sphatika* or rock-crystal.‡ With this story the name of Bolor may have been connected.

In the middle of last century the Jesuit Fathers, d'Arocha and others, who followed in the wake of the Chinese conquest of Eastern Turkestan, brought back with them a number of latitudes and longitudes, which, till recently, formed the chief basis of the geography of that part of Asia. These were of very various value, and embraced not only cities of the Turkestan basin, such as Khotan, Kashgar, Yarkand, &c., but also a number of places either in the heart of the mountains or beyond them to the westward. Thus to the north-west we find (with positions assigned) Andijan, Marghilan, Namagan, Kokan, &c., and to the south-west Sarikol, *Kurchu*, Wakhan, Shighuan, Roshan, Badakhshan, and lastly, *Polooul* or Bolor.

The fact that this Bolor of the Jesuits is recorded by them as in latitude 37° , i. e. in precisely the same latitude that is assigned to the *Belûr* of Naaruddin Tûsi, was one of those circumstances that formerly impressed me with the genuine nature of both observations, and with the veritable existence of a Bolor to the west of Pamir. This, I am now satisfied, is a mere accidental coincidence. How the Jesuit maps came to assign this position to Bolor, and so to corrupt our geography for many years, is a point to which I will return before concluding this paper.

We now come to the most serious ground that I was aware of, until I saw Mr. Shaw's letter, for believing in the existence of a country called Bolor as distinct from Balti.

This is found in extracts which Klaproth has published from the Chinese Imperial Geography.§ These not only show Bolor (or a state so termed by the Chinese) as distinct from Balti, but also represent it as in close contact with Badakhshan, which Balti certainly is not.

"This country," says one extract, "is situated to the south-west of Yarkand, and to the east of Badakhshan. The way by which its tribute arrives at Peking is the same as for the other Mahomedan countries. Under the Han [B.C. 202–A.D. 220] Bolor formed part of *Uchha*; under the Goei [A.D. 220–265] it was the kingdom of Akeu Khiang.¶ In (1749) ¶ its Prince

* No copy of Abulghazi is accessible to me.

† 'Caubul,' i. 118.

‡ 'Pelerins Boudhiques,' ii. lxxiv.

§ 'Magasin Asiatique,' vol. i. p. 96.

¶ *Uchha* was a small state in the valleys between Sarikol and Yarkand, as may be seen from Hwen Thsang. The name still survives, slightly altered.

¶ Probably a misprint for 1759, the year of the Chinese conquest.

*Shakhu Shamed** submitted himself to the Chinese, and his country was taken into the limits of the empire. The following year he sent Shah-bek as ambassador to the Emperor, who was well received. . . . In (1763) another embassy brought tribute, consisting of sabres and battle-axes. The year following, this country was invaded by Sultau Shah, of Badakhshan; the Prince then demanded help from the Chinese General in command at Yarkand. The latter desired Sultan Shah to evacuate Bolor, and to stop hostilities. The King of Badakhshan obeyed this order, and Shakhu Shamed wrote a letter of thanks. The two adversaries sent missions to the Emperor with tribute, consisting of daggers, which they possess of excellent quality. In (1769) a new tribute, consisting of jade and daggers, arrived from Bolor, and since then it has always been presented regularly at the appointed times."

Another passage, describing the Chinese expedition against Badakhshan in 1758, in pursuit of the fugitive Khojas of Kashgar, says that its result was the submission of the King of Badakhshan, with all his people, amounting to 100,000 families, to be included within the limits of the empire, and also that of *Bolor*, consisting of 30,000 families, and situated in the neighbourhood.†

There follows (p. 97) a passage about *Balti* which runs thus:—"This country is south of *Bolor*, and east [*sic*] of India. . . . In ancient times it was unknown to the Chinese. It lies on the eastern frontier of India; the manners and customs of its inhabitants are almost the same as those of that country. Formerly it must have been on the borders of the kingdom of *Kipin*,‡ which existed in the days of the Han and the Tang dynasties. The country is mountainous, and is traversed by a considerable river; at present its confines adjoin Tibet, Chamba, Kashmir, and other kingdoms. It is divided into two hordes, one of which is governed by *Memeskar*, and the other by *Usman*, each of the two chiefs commanding 8000 men. For a long time the inhabitants of *Balti* have entertained commercial relations with Yarkand. In 1760, after the pacification of the western countries by the Chinese forces, both the chiefs demanded to be taken within the limits of the empire, and since then their subjects come regularly to the Chinese markets."

Here, certainly, we have a *Bolor*, in immediate connexion with Badakhshan, and entirely distinct from *Balti*, though we do not find the slightest ground for placing it in the position which *Bolor* has in the Burnes and Kiepert maps.§

Mr. Shaw's evidence that the name is applied by the Kirghiz to *Chitral* is very remarkable, and I can see nothing in the passages quoted that is inconsistent with this. We have no genealogy of the *Chitral* dynasty by which to trace the name of the prince reigning in 1769, for that given by Mauphul begins only with the chief who died in 1829.¶ But such a genealogy could, no doubt, be obtained by any officer on the Peshawur frontier, or, perhaps, by Mr. Shaw himself at Ladak. And I have found, since this paper went to the printer, a statement of Wilford's that *Chitral*, at the end of last century, was tributary to the Emperor of China; a circumstance which, when coupled with Klaproth's extracts cited above, renders it certain, I think, that the modern Chinese *Bolor* meant *Chitral*.‡

* Probably Shah Khushamad, or Shah Khush-Ahmed.

† *Mag. Asiat.*, p. 92.

‡ Kabul.

§ Before I saw Mr. Shaw's letter I supposed that this Chinese *Bolor* must be either Wakhán or Sirikui. But the Jesuit map shows that *Bolor* was recognised as distinct from these.

¶ Mauphul's 'Giigliit, Chitral, and Kashmir,' p. 7.

‡ As. Researches, vi. 457. Wilford here shows a knowledge of the geography of that frontier much in advance of the time (1799), derived from his friend Moghal Beg, whom he employed to explore and survey the Panjab and its north-western frontiers. He states also that "the Chinese are now in possession of Badakhshan

As regards the people called *Belors*, who play a prominent part in the anonymous German travels, and on whom M. Veniukof has written a special paper,* I believe that they grew entirely out of an error, the exact converse of that which led Abel Rémusat to confound *Poliu*, or Little Tibet, with the *Puruts*, or Hill-Kirghiz, as noticed above. The *Buruts*, *Puruts*, or Kirghiz, appear in some Chinese works as *Fulurb*, and this has apparently been transliterated, under the influence of the old Bolor notions, into *Bolor* or *Belur*. I can give only one reference in evidence,† but I have a strong conviction that this suggestion, fairly handled, will account for all genuine notices of a people so called.

I now return to the Jesuit survey of 1759, respecting which it is desirable to enter into some further detail.

In trying to trace the *rationale* of the errors of that survey, it soon became evident that a systematic *bouleversement* had affected a large part of it. True names were there, such as *Wakhán*, *Badakhshán*, *Shighnán*, *Kashán*, but positions were assigned to them which, when protracted, were wrong, not by individual errors, but by some great error affecting a whole tract; and this error appeared to be that a sheet of the original map had been turned through an angle of 90°, so that east became north, north became west, and so on.

But, being desirous to get to the root of the matter, I solicited the good offices of Lieutenant Garnier at Paris to obtain for me a trace of Pamir and the adjoining regions, from the Chinese map of Turkestan, which Klaproth had before him in compiling his map of Central Asia, but which, as regards Pamir and Badakhshan (the fact is remarkable) he did not use, leaving that part of Central Asia a blank upon his published map.

Eventually I received from Lieutenant Garnier photographic copies of the map, bearing many of Klaproth's autograph transcriptions of the Chinese names. Moreover, Lieutenant Garnier, with infinite trouble and kindness,‡ compared these transcripts with the originals, rendering them more literally, and transcribed for me a number of other names which Klaproth had not rendered.

From the maps so obtained I have made the reduced extracts, Nos. 1 and 2, which accompany this paper. In making these I have abandoned the literal transcription of the Chinese syllables as beside the present question, using the names, where we know them, in their proper forms; but I append at the end a list of the more important names, with either the Chinese syllables as transcribed by M. Garnier, or Klaproth's freer rendering, or both.

The part of the map which has been deranged in azimuth is distinguished by a shade. In No. 1 it stands just as extracted from the Chinese Map. In No. 2 the shaded part—retaining all the places within it in their relative positions unchanged—has been turned through an angle of 90°.

In addition to this gyration, however, Faizabad, with all the rest of the extract west of that point, has been advanced five spaces to the west. Now mark the result.

In No. 1 you have *Badakhshan*, with *Bolor* to the north of it; *Wakhán* to the north-west of that; *Jahil-Kul* to the west of *Wakhán*; *Roshan*, *Shighnan*, and *Shakh-dara*, to the west of *Bolor* and *Badakhshan*, &c. You find, in fact,

as far as Baglán, in the s.w. of Anderab." This means, I conceive, merely that the country paid tribute to China; but I suspect that the passage gave rise to the imaginary German's representation that Badakhshan was garrisoned by Chinese troops.

* 'Chinese Repository,' ix. 129.

† See 'Journal of the Royal Geographical Society,' vol. xxxvi. p. 265.

‡ This was but a part of his trouble. For Klaproth's maps, or copies of them, not existing in the Paris library, he had actually traced them to the present owner (M. Thonneller), and obtained his obliging permission to photograph the maps.

that false geography which places a *Bolor* to the north of Badakhshan, and a *Vochan* far to the north-west of that, just as in Kiepert's Asia of 1864, in Veniukof's map in vol. xxxvi. of the 'Journal of the Royal Geographical Society,' and in the German and Chinese travels of the Russian Archives. The real relations of those places are shown in my map, No. 3, from the latest materials available to me.

But when you make the changes that I have indicated, as in No. 2, all the places fall into approximately right positions, as you may see by comparing them with my map, No. 3. *Wakhan* (probably representing Issar), *Khandūt*, *Ishtadrgh*, now are dotted along the south-westerly course of the Panja, or Upper Oxus, which near *Ishtadrgh* makes a great elbow, running northward by *Shighnan* and *Roshan*, just as we know the facts to be. *Pamir* comes back from the exclusive position far to the north, where the name has been perplexing the Russians, to the neighbourhood of Lake Victoria. *Argu*, *Dairaim*, *Yastal* (*Yabtuar* of Kiepert's map, and of a map of my own in 'Cathay,' following Arrowsmith, and *Ergen*, *Dairim*, and *Yattuar*, of Veniukof's), which the Chinese maps, and these their honest followers, as well as their dishonest follower, the forger of the MSS. of St. Petersburg War-office and the London Foreign Office, had placed somewhere away to the south-east of Badakhshan, recover their approximate positions on the banks of the *Kokcha* to the westward of *Faizabad*.

I should observe here that in Klaproth's original, in place of *Faizabad* occurs a reduplication of the name of *Yastal*. But here Klaproth himself has noted "*FYZANAD dans la grande carte de Londres.*" It is evidently, therefore, an engraver's error merely for *Faizabad*.

I apprehend that the name *Badakhshan* indicates the old capital, which stood, according to Pandit Manphul, on the plain of *Baharak*, about 20 miles east of *Faizabad*. The seat of government seems to have been transferred to the latter place only in the last century, but apparently before the Chinese incursion.

Karchu, it will be seen, which has haunted our maps for fifty years, is not found in my extracts. The fact is that the name which has been so rendered really represents a word which is not *Karchu*, but *Katchūt*, and from its position I have myself no doubt that it was merely a rough shot at the position of the frontier of *Kanjūt* in *Darlistan*.

In the same manner *Bolor* was almost certainly, in accordance with Mr. Shaw's discovery, a rough shot at the frontier of *Chitral*. The guides of the Chinese force which crossed *Pamir* were probably *Kirghiz*, who used this name.

It will have been observed that I not only turn the shaded portion of the map through 90°, but also shunt *Faizabad*, and all beyond it, five spaces, i.e. five degrees of longitude, further west. And this may seem rather a violent measure. But the fact is that, in the original map, there is a blank space of six degrees, through which the *Kokcha* is shown running westward, without a single name upon its banks, between *Rustak* and *Talikān*. This, of itself, indicates the need for such a shunting process, the real distance in longitude between *Rustak* and *Talikān* being half a degree. And the result of the shunting is not only to put *Faizabad*, &c., into proper relation with the shaded portion of the maps, but to place the whole of the localities on the *Kokcha* and the *Oxus*, from *Faizabad* to *Balkh*, in reasonably correct relation to each other.

How the derangement came about is more than I am bound to show. But some circumstances make the manner of it easy to conceive.

In the first place, if you remember that Chinese is written vertically (from

* *Faiz Bakhsh*, indeed, alludes to a *Kanjūt Darah* on the *Sirikol* side of the mountains, which may be the *Katchūt* of the tables, but I cannot locate it.

north to south as it were), whilst European tongues are written horizontally (from west to east), it may easily be understood how such a mistake should occur in transferring a map either from Chinese to Latin characters, or vice versa.

Secondly: I have hinted on my maps, by making the degrees of latitude and longitude equal, at another circumstance that might have facilitated the mistake. The field-sheets may have been so divided; and in any case it is a common practice of Chinese map-makers to cover their maps with a reticulation of squares, each side of which is a definite number of *li*, 10 or 100.

We may conceive, then, that in the compilation of the map from separate sheets, that which we have shaded was first omitted altogether, and so Faizabad, Dalrim, &c., were brought a great deal too far east. And, when the omission was discovered, the omitted sheet was inserted with perverted azimuth. Hence all the perverted geography of Pamir and Badakhshan which has affected our atlases for so many years! It is also possible that the fact (I believe it to be a fact) of the existence of two lakes on Pamir bearing the quasi-identical, and perhaps actually identical, names of *Riang-Kul* and *Rang-Kul* may have given a direction to the mistake. If you look at the position of *Rang-Kul* (or *Ran-Kul*) as laid down approximately on my map, No. 3, you will see that in the deranged map it would nearly come into the position of *Riang-Kul*. The identity or resemblance of name in this case has led to a curious mistake in Mahommed Amin's Itineraries in the Panjáb Trade Report.

I abstain purposely from all geographical discussion not bearing directly on the subject of this paper; but, if my view be right, there are several legitimate deductions worth noting.

First, we get some insight into the nature and value of the later Jesuit surveys on the frontier of the Chinese empire, on which we were obliged so long to found the elements of our Central Asian geography. It is obvious that the tables of latitudes and longitudes were, so far as my extracts are concerned, deduced from the maps, and not the maps based on the tables. In fact the Jesuit tables, as regards these localities, were constructed just as I imagine Ptolemy's tables to have been formed: *i.e.*, an extremely inaccurate map was covered with a *graticule*, and the resulting co-ordinates entered in a Table of Latitudes and Longitudes.

I do not by any means apply this to the positions where Father d'Arocha and his companions were present, and made observations in person, such as *Kashgur*, *Yarkand*, and probably even *Sirihol*. In fact the tabular latitudes of these are too good to admit of such an idea.

Secondly, Bolor, it may be hoped, is now finally disposed of. We not only know that there is no such place where it was located, but we can also now account for the error. The name Bolor is, I see, still used by recent geographers for the Pamir Mountains. But the name has been so tainted, both by accidental error and by forgery, that it would surely now be well to dismiss it from our maps and books altogether. *Karchu*, also, has been, we may hope, finally remitted to limbo.

Lastly, should there anywhere survive a lingering inclination to accept the documents of the Russian War-office as founded on genuine narratives, because of their agreement with the geography of the Jesuit Fathers, let us observe that, as we now see the latter to have been founded on downright accidental error, it follows that the former, which corroborate that error, are downright forgeries.

LIST OF NAMES.*

Literal Transcription by M. Garnier.	Klaproth's rendering.	Identified name as entered on the Maps accompanying this Paper.
1. Ho-see-lu-ke-ta-lia-han	Hosluk Dabahan	Kizlak Dabán. Apparently = Kizil Yart Kotal, of Ma-houmed Amin.
2. I-shi-eul Khu-eul ..	.. ..	Ishil-Kul. The Ishalkul of Manphul.
3. Ten-see-khu-eul	Tussé Kul	Tuzé Kul. This is perhaps Wood's Lake, but it is doubtful.†
4.	Wakhan	Wakhan.
5. Hia-lu-ke	Khaduk	Khandut in Wakhan Valley.
6. Se-le-khu-eul	Serekul	Sirikol.
7. Ke-tsu-chi	Katchut	Kaujut.
8.	Siknan	Shighnan.
9.	Oloshan	Roshán.
10.	Saktala	Shakh dara.
11.	Istelak	Ishtrigh.
12.	Badakahan	Badakhshán.
13. Ya-pu-ta-eul	Yaptar	Yafat.
14. Ya-pu-ta-eul	Yaptar again, with note "FYZARAD dans la grande carte de Lon-dres."	Faizabád.
15.	Ergu	Argu.
16.	Dalim	Daraim.
17. Yang-ngo-li	Yangkhali	Yangkila on Oxus (Wood's <i>Jankila</i>).
18. Chay-ya-pu	Chayab (G.) ..	Cháhi-áb, between Kokcha and Oxus.
19. Sha-li-pu-so-lo-ko ..	Shalimolok	Shahr-buzurg, north of Kokcha.
20. Sa-mo-ti	Samli (Shamad ?)	? Perhaps <i>Mashhad</i> inverted.
21.	Tisigen	Teshkán.
22. Lu-ta-ko	Ruták (G.)	Rusták.
23. Feiling	Filing	Probably <i>Dara-i-Farug</i> of Macartney's map; the <i>Firinj</i> of Lord's Report on Kunduz.

* In using the transcription of Klaproth and M. Garnier, I have eliminated the peculiarities of German and French spelling.

† See Geographical Essay in new edition of 'Wood's Journey,' p. lxxvii.

Palermo, August 6th, 1872.

H. YULE.

XX.—*Monograph on the Oxus.* By Major-General Sir H. C. RAWLINSON, K.C.B., President R.G.S.

[This paper was read at the meeting of the British Association at Liverpool in September 1870, and was intended to form the first chapter of a "Memoir on the Oxus," which I hoped to publish entire in the 'Geographical Journal' for that year. The preoccupation of my time, however, has prevented me from completing the two other chapters of the Memoir up to the present day; and I will no longer therefore delay the publication of the Introduction. I shall finish the remaining portion as soon as I can command sufficient leisure, but cannot now expect that it will possess much novelty or interest, as Colonel Yule has in the meantime pretty well exhausted the geography of the region.—H. C. R., April 1873.]

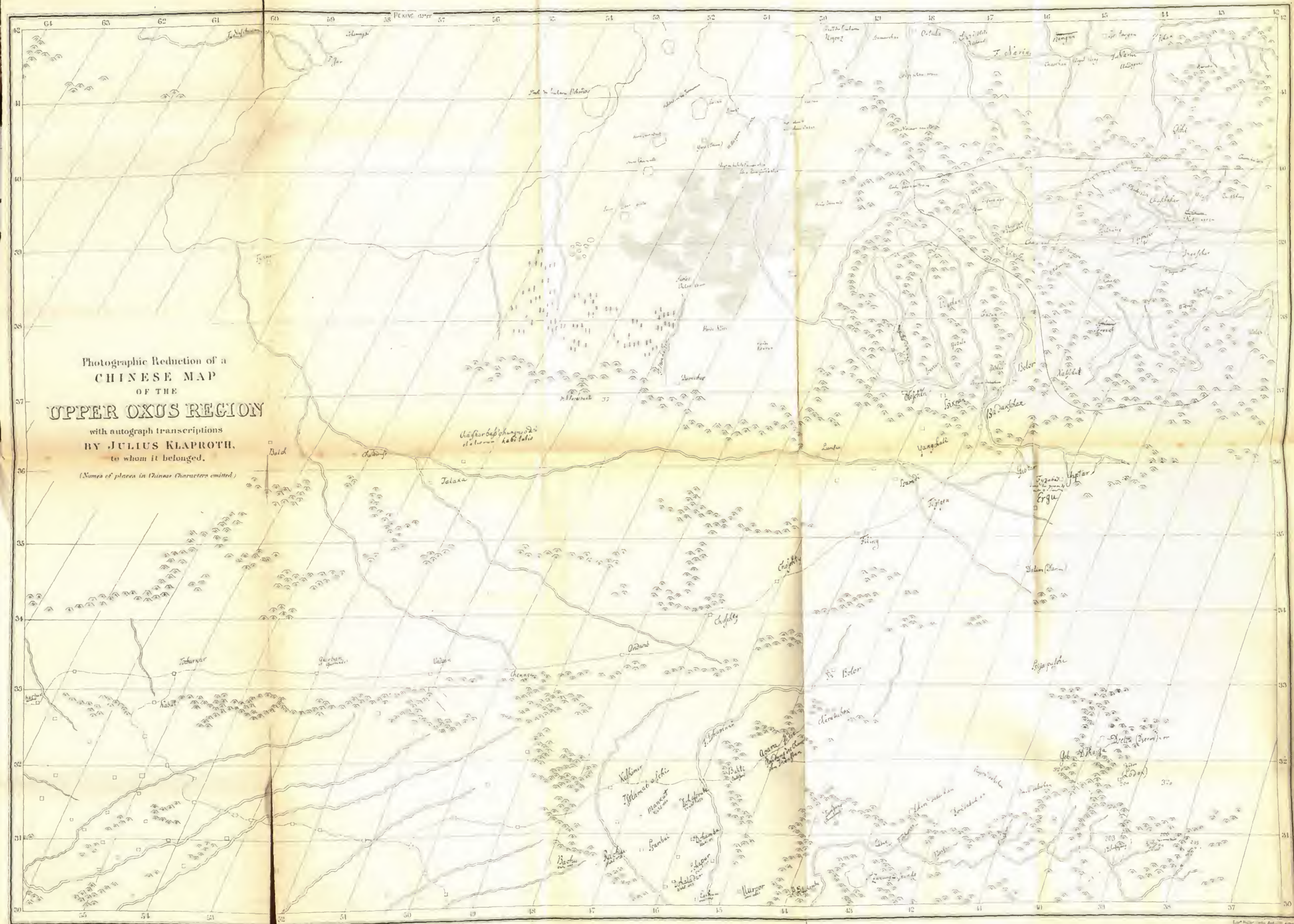
PART I.

IT would seem convenient at the present time, when the Oxus attracts so much attention as the natural and proximate boundary between the Russian and British dependencies in the East, that an attempt should be made to place before the public, in a condensed form, the varied information we possess from scattered and miscellaneous sources, with regard to the course of this river, and its affluents, from its rise in the Pamir to its embouchures in the Aral and the Caspian seas. For such a purpose it will be necessary to combine the observations of British and Russian explorers, with the less reliable reports of native travellers, and to compare the results which may be thus obtained with all those notices of Oriental authors that are original, or bespeak a personal acquaintance with the country; and it is the more desirable that the ample, though in some respects conflicting, materials which I have noticed should be now subjected to a conscientious scrutiny, as the geography of the Upper Oxus has been grievously disfigured of late years, by a series of fictitious travels, which have been palmed off on the scientific world, both in London and St. Petersburg, as genuine documents, and have been adopted to a greater or less extent into the official, or quasi-official, maps of both countries. A full discussion of this question of literary forgery, affecting as it does the geography of all Central Asia, would be out of place perhaps in a paper which treats exclusively of the Oxus; but on the other hand, as it will be necessary to eliminate from future maps of the river the gross inaccuracies which Russian cartographers have introduced, some account of the sources from which their errors have arisen can hardly be dispensed with. It may be explained, then, that in 1861, Monsieur Veninkoff first drew attention to two remarkable documents, which he had disinterred from the archives of the *État-Major* at St. Petersburg, and

Photographic Reduction of a
CHINESE MAP
OF THE
UPPER OXUS REGION

with autograph transcriptions
BY JULIUS KLAPROTH,
to whom it belonged.

(Names of places in Chinese Characters omitted.)





which appeared to him to have an important bearing on the geography of Central Asia. One of these was the manuscript journal of an English expedition, said to have proceeded in quest of horses, towards the close of the last century, from Cashmere to the Kirghiz Steppe; and the other was the translation by Klaproth of a Chinese Itinerary, which passed over a good deal of the same ground as was traversed by the so-called English expedition, so that the two independent documents might apparently be used for mutual illustration.* I had no opportunity of becoming acquainted with either of these papers, except in name, till 1865, when, on perusing an abstract of the so-called English journal, furnished by Monsieur Khanikoff to Sir Roderick Murchison, I pronounced the whole story to be "an elaborate hoax."

My reasons for arriving at this unfavourable conclusion, on the ground mainly of internal evidence, were communicated to the Geographical Society of London, on March 26, 1866, and are to be found in Vol. X. No. IV. of our 'Proceedings.' In London my arguments seem to have met with a ready assent; but M. Khanikoff, on being informed of them, at once took up the cudgels in defence of the Russian manuscript, and his letters on the subject, together with two chapters of the text, cited in support, and a rejoinder from Lord Strangford, arguing against the authenticity of the narrative, were severally published in our 'Proceedings,' Vol. X. No. VI. In the meantime, while prosecuting further inquiries into the matter, in connection with an article on "Central Asia" which I was writing for the 'Quarterly Review,' I discovered that a third paper, a MS. Report by Klaproth, which bore a most suspicious resemblance, both in form and in subject-matter, to the Russian document—purporting, in fact, to be the journal of a Russian expedition sent towards India—was deposited in the archives of our own Foreign Office; and to this circumstance, accordingly, I drew attention in a note to the 'Quarterly Review' article (No. 240, page 480), in which I suggested that the double mystification of the Russian and English governments would probably be found to proceed from the same individual. Lord Strangford, acting on this hint with his accustomed energy, and having access for the first time to the original papers of Veniukoff, which were published in the London 'Geographical Journal,' vol. xxxvi, pages 248-279, obtained Lord Stanley's permission to examine the Foreign Office MS., and soon satisfied himself

* The first public announcement to British geographers of the existence of these extraordinary papers was contained in a note to page 50 of Michell's 'Russians in Central Asia,' which was published in 1863, but I had seen the sheets of this work some two or three years previously.

that my conjecture was correct.* He stated his general views upon the subject at a meeting of the Royal Geographical Society, held on November 9, 1868 (see 'Proceedings,' Vol. XIII. No. i. page 20), and but for his untimely death, would have instituted and published an elaborate comparison between the three documents in question, the result of which must have been to put an end to all controversy. I should esteem it a duty to Lord Strangford's memory to take up the argument at the point where he left it, and carry it to its legitimate issue, if the interests of geographical science were really at stake; but for all practical purposes, the exposure of the Klaproth imposture is already complete.† It has been shown by Lord Strangford, 1st, that the Geography of the three incriminated memoirs, which in each case professes to be the result of actual observation, is essentially wrong, and that the travels are therefore self-condemned; 2ndly, that the same errors, especially in regard to the country between Cashmere and Pamir, are common to all

* The Klaproth MS. in the Foreign Office claims to be the confidential report of a Russian Surveying Expedition, sent from Semipalatinsk to the Indian frontier, by the Emperor Paul, in the years 1801-1802. The MS. was entrusted to Klaproth, as he says, for geographical purposes in 1806, when he was in the employment of the Russian Government, and he made a translation of the document into German for his own private use. This translation, with a re-translation into English and two copies of the sketch routes, most elaborately and beautifully executed in sections, were bound up in a volume and sold by Klaproth to the British Government, for the large sum, as it is said, of 1000 guineas. There is positively nothing of political importance, or even interest, in the volume (except the assertion that it is perfectly practicable to march a large European army from Siberia to the Cashmere frontier), and the geography south of the Thian-shan Range is not in any instance to be depended on, so that our purchase of the volume was hardly a profitable bargain. Bound up with this volume there is also a MS. Map of Central Asia in 6 sheets, laid down by Klaproth in his own handwriting, in 1822, together with a memorandum, in which he says, "For the western part of Thibet, the Penjab and Hindostan, I had no other materials than those furnished by Mr. Arrowsmith's Maps." This is certainly untrue, as a comparison of the maps will show, and indicates, as I think, intentional deception.

† M. Khanikoff has hitherto, as far as can be ascertained from his published opinions, resolutely resisted all the evidence brought forward to impugn the authenticity of the Russian MSS. Abandoning the position which he at first took up, that the British Expedition must have been organised at the commencement of the present century as opposed to the stubborn facts of Indian official history, he has rendered a direct refutation of his views more difficult by throwing back the date of the German Baron's travels some thirty or forty years into the last century; and he assumes, indeed, to have found a confirmation of this earlier date in the Baron's allusion to the battle between the Chinese and Badakhshāns in 1759; but it is now quite certain that this reference was introduced designedly into the spurious journal for the mere purpose of deception. Khanikoff, I may add, received the full approbation of the President of the Paris Geographical Society, in his mistaken, but honest efforts to uphold the authenticity of the German travels, and it would be interesting, therefore, to know if these great authorities still adhere to their belief in the *bona fides* of the Baron's narrative, or if the discovery of the Klaproth MS. in our Foreign Office and the extension of local research, both English and Russian, has at length convinced them that they have been the victims of what I ventured to call at the outset "an elaborate hoax."

three papers, and are not to be traced in any other independent authority; 3rdly, that as two of the documents avowedly spring from Klaproth—one being a pretended translation by him from a Chinese original, and the other a pretended copy by him of a confidential Russian paper surreptitiously obtained from the official archives*—it is only reasonable to conclude that he is

* The following comparative précis of the routes from the Indus to Badakhshán, which I have extracted respectively from the Foreign Office MS., and from the Chinese Itinerary, as epitomized by Veniukoff, (see Geographical 'Proceedings,' Vol. XIII. No. v. p. 34,) and which may be taken as an example of their general agreement, will afford conclusive evidence that the two accounts, equally spurious, must proceed from the same source.

CHINESE ITINERARY.

Dimganga, on the Upper Indus. Road to the West Indus affluents, namely, Pungbu, Ongo, Uiranghi, and Ghermuk. Beyond junction of Ghermuk and Tugtakhiru. Cross the Bolor Range at Mount Olgomardi. Santradu and Kof streams, beyond snowy range.

Town of Dairim, famous for grapes. Stream of Ubgaritu (with Lapis Lazuli mines); passes town of Erghen, Lakes of Ghalun and Ush, and fort of Yab-tuar, to Badakhshán.

KLAPROTH MS. IN FOREIGN OFFICE.

Expedition winters at Dimgong. Cross range to Ongo, which joins Rungha and falls into Indus; beyond streams of Urtanaghi and Germuk. Cross Tuktarghir running east. Mountain of Olgomardi in snowy range. Cross the range to rivers of Santradu and Kof.

Town of Dairim, on rocky hill. Plain watered by Ubgaritu. Town of Ergu, near Lake Ghalun. Mines of copper, Lapis lazuli, &c. &c. River of Ubgaritu flows by Lake Ush and fort of Yabsar to Badakhshán, where it is called the Kokcha.

It will thus be seen that every name that is quoted by Veniukoff from the Chinese Itinerary occurs in the Klaproth MS., and probably if Veniukoff's extracts had been fuller, the identity of the two documents would have been more conspicuous. At the same time this pretended derivation of the stream of the Kokcha from the eastern positions of Dairim and Ergu, and its course through a fertile valley, studded with lakes, is entirely fabulous. Wood having traced up the rocky bed of the river almost to its source, when he visited the Lapis Lazuli mines 40 miles north of Jerm. Klaproth, however, always contrived to mix fact and fiction in a most bewildering manner. The Lapis Lazuli mines do actually exist on the line of the Upper Kokcha, and the name of Ergu or Erghen is especially applicable to such a locality. (Compare the many Arganas in the Taurus each with its mines of copper, silver, &c.; the Arghan-jika of Wood, p. 304, with its iron mine, &c.) Further, these names of Dairim and Ergu are really associated in another part of Badakhshán, being the names of two parallel valleys, which are crossed on the high road leading into the province from the west, each with an independent stream flowing into the Kokcha in the lower part of its course.

A circumstance which at one time added much to my mystification in regard to this fabulous geography, was the discovery that Colonel Gardiner, who certainly did visit Badakhshán in person, had in his description of the Kokcha corroborated the statements of Klaproth in the most remarkable manner. Not only did I find that he had given the same extended course to the river in a fertile valley from east to west, but under the disguised orthography of his nomenclature, which always requires the art of a decipherer to render it intelligible, I recognised the familiar names of Dairim and Ergu, of Lakes Ghalun and Ush, and of the fort of Yab-tuar. Now as it was a moral impossibility that Colonel Gardiner could have ever seen the fabricated MSS., I was, I confess, very much impressed at first by this strange coincidence of name and general description; but after a careful

also the author of the third, or, at any rate, was concerned in its fabrication; and it may be further added that, assuming interested motives rather than a mere love of mystification to have led to the manufacture of the travels, the money value of the articles in the respective markets will explain why the intercepted Russian report was transferred to the English Foreign Office, while the Indian papers were consigned to the archives of St. Petersburg; the Chinese Itinerary being at the same time invented to vouch as an independent Geographical authority, for the genuineness and consequent political value of the other documents.* Such being the present aspect

examination I found that all Colonel Gardiner's geography of the Upper Oxus and the surrounding countries, however overlaid with imaginary names, or in some few cases improved and verified by actual observation, was as a rule dependent for its foundation on Arrowsmith's Map of 1834; and when at the same time I remembered that this map was itself laid down in regard to its eastern portion from the Foreign Office MS., the mystery was at once dispelled, and I became aware that what seemed to be an independent corroboration was in reality nothing more than a repetition of the original fiction; that in fact we were moving in a vicious circle.

Lord Straugford, in his last address to the Geographical Society ('Proceedings,' Vol. XIII. No. 1. p. 21), explained how Arrowsmith in constructing his map of 1834 came to be imposed upon by the Klaproth forgeries; and thus by anticipation answered Veniukoff's argument ('Geographical Proceedings,' Vol. XIII. No. V. p. 346) that the Dairim of the Chinese Itinerary must needs be genuine, because the town was duly inserted in the previously published English map. It is, no doubt, much to be regretted that Arrowsmith, whose general accuracy is proverbial, should have given currency to the mischievous fictions of Klaproth, and in the matter of the Bolor River and Wakhán, should have thus led astray so good a geographer as Humboldt (see '*Asie Centrale*,' tome II. p. 371); but he acted at any rate in perfect good faith, and in some measure on official authority, as the Klaproth MS. had been purchased for a large sum by Mr. Canning for our Foreign Office, and its genuineness was at that time unimpugned.

* The fabrication of the Foreign Office MS. and of the Chinese Itinerary can be brought home to Klaproth, I think, positively and with almost mathematical precision, but the attribution to him of the German Baron's narrative does not rest quite on the same determinate evidence. The strong point against Klaproth is that, attached to the Foreign Office MS. (and independently of the sections with which the Itinerary is illustrated, precisely in the same way as the St. Petersburg MS. is also illustrated with sections), there is a general map of Central Asia in 6 sheets, drawn up in Klaproth's own handwriting, which represents Cashmere under the same distorted features, and with the same fictitious local nomenclature that are to be found in the Baron's pretended travels. Thus, between the town of Srinagar and the Indus (the interval being reduced from 200 to about 50 miles) we have in the map the following stations: Savana, Oushkur, Durtchanga on river, Iberitanis, Gelibaram, Kernawadi, Birlonmba, and Paribawa on the banks of the Indus, every one of these names being fictitious, but every one occurring precisely in the same order both in the *Mémoires* and in the map of the German Baron, as may be seen on a reference to the tracing which was prefixed to Vol. X. No. VI. of the Geographical '*Proceedings*.' Now Lord Straugford was of opinion that this agreement in a false geography, not otherwise known to exist, proved one of two things, either that Klaproth must have copied his map from that of the German Baron, the asserted recent discovery of the latter document being thus shown to be untrue, or that he was himself the author of both of the fabricated Journals. There does, however, seem to be an alternative explanation that both Klaproth and the inventor of the Baron's travels may have copied from a third spurious original, which is as yet undiscovered; and I am the rather inclined to

of the question, it will only be necessary, I think, to point out Klaproth's false geography of the Oxus before seeking to restore its true geography. As the travels described in the Klaproth MSS. pass in one instance from Cashmere direct to the Pamír Steppe, and in the other two instances from Northern Baltistán through Badakhshán to the same table-land, it is evident that each line of route transects all the head-waters of the Oxus; and if genuine would thus afford invaluable aid in testing the accuracy of the more ordinary routes which run from west to east parallel to the upper affluents of the river; but it need hardly be said that no such aid is really afforded. There are two radical errors, indeed, in Klaproth's Geography of the Oxus, which not only vitiate his whole system, but which render it impossible to lay down, even approximately, on a true map of the country, the routes which he describes. In one direction he interposes between the Chitrál Valley and the upper basin of the Oxus, a third parallel valley through which he brings the Badakhshán or Kokeha River from the vicinity of the Indus, whereas we know that there is no such valley, but that a single mountain chain, the continuation of the Kuen-Luen, which is of no great breadth, and is traversed by well-frequented passes at several different points, alone separates the Chitrál or Mastúj Valley from the Oxus—the courses of the Kokeha and its tributaries, which have been examined by Lieutenant Wood and our native explorers almost to their sources in this very range of mountains, being south and north, instead of east and west.* In the region north of

attach some weight to this hypothesis that beyond the Indus, Klaproth's Map exhibits no similarity whatever to the Baron's Journal, either in nomenclature or in the general description of the country; and it certainly does seem extraordinary if Klaproth really invented the Baron's story and tracings that he should not have reproduced the fictions in constructing his own subsequent map. The same anomaly, however, occurs in respect to the relation between the spurious Russian travels and Klaproth's Map, which is included in the same MS. volume, the route from Dimgong on the Indus, westward, which forms a prominent feature in the geography of the one, being entirely ignored in the other.

* I have already alluded to the errors which crept into Arrowsmith's Map of Central Asia, published in 1834, through the medium of the fabricated Klaproth Journals. These errors mainly relate to the upper course of the Kokeha and to the Bolor or Voehan River, and can easily be corrected; but in the same map there are other indications of a very doubtful character relating to the geography of the country between India and the Oxus, for which Klaproth is not responsible, and the source of which until lately I had failed to discover. Having recently, however, had an opportunity of consulting a copy of a most elaborate map of the north-west frontier of India, compiled by Wilford at the commencement of the century, but never published, I have found in that document all the apocryphal names of places in the Chitrál and Gilghit valleys, and the neighbouring mountains which appear in Arrowsmith's Map, and for which I have been long trying in vain to discover his authority; so that I cannot now doubt but that Sir A. Burnes must have seen Wilford's Manuscript Map, and communicated its contents

the Oxus, Klaproth's indications are even more irreconcilable with our knowledge of the country, inasmuch as, instead of describing a series of streams of greater or less volume draining off to the south-west the overflowings of the Pamír uplands, he invents a great Bolor river which runs through Pamír from south to north, passes two imaginary cities of Bolor and Vokhán, and ultimately finds its way to the Oxus at some unknown point of junction.

It would really be a waste of time to follow this fabulous geography in detail. Klaproth, or whoever was the true author of the several manuscripts, may have conversed with persons who had really traversed Badakhshán in passing between India and Turkesthán, since there is not only a general air of verisimilitude in the description of the natural products of the mountains and the manners and customs of the inhabitants, but names are also given which actually exist in the country (though not in these precise localities), and which could hardly, therefore, have been learnt except from genuine travellers in the region described; but, having admitted so much, I have said all that is to be said in favour of the apocryphal travels.*

to Arrowsmith when the latter was employed in illustrating the journey of our famous traveller from India to Bokhara.

Another remarkable instance of erroneous geographical nomenclature which originated with Macartney has been preserved, and indeed assigned a prominent place in Arrowsmith's Map of 1834; I allude to the name of *Tootookan-Mutkuneé*, which is applied on the map in question to the culminating peak of the Indian Caucasus, and by which, accordingly, the entire range from Cashmere to Badakhshán has been since very frequently distinguished. In reality, however, Tootookan and Mutkuneé are the names of two small villages at the junction of the Swát and Pénjkorah rivers, at least 100 miles distant from the peaks of the Caucasus, and the translation of such names from the plains to the mountains is a notable example of the want of precision in our early map-makers. Macartney, indeed, observing from Peshawer some hills on the far horizon in the same direction as the two villages of Tootookan and Mutkuneé, and estimating the course of the Swát River which filled up the interval between the two points at much less than its real extent, thought it sufficient to designate the range by the name of Tootookan Mutkuneé Mountains, that is, the mountains from which descended a stream that passed through a short and narrow valley to the villages of Tootookan and Mutkuneé. The origin of the name being overlooked, Tootookan Mutkuneé has thus come to be regarded as the special title of the prolongation of the Hindú-Kásh, and much geographical confusion has arisen in consequence.

* Lord Strangford was of opinion that Macartney's map, prefixed to Mr. Elphinstone's 'Cabal,' was the geographical basis on which the Klaproth forgeries mainly rested; and in so far as regards the erroneous configuration of Cashmere, and the near contiguity of Srinagar to the Indus, this explanation would seem to be correct; but many independent sources of information, Chinese, Arabic, Persian, and above all the oral accounts of travellers, must have been also laid under contribution, in the attempted delineation of the regions north of the snowy range. The name of Bolor, indeed, which may be called the pivot of all this spurious geography of Central Asia, bears direct evidence to the historical sources from which it is derived, for this title, although in general use amongst writers from the 10th to the 17th century, has become obsolete in the country ever since, and was certainly quite unknown at the date of these pretended travels, whether applied to a river, or to a city, or to a range of mountains. With regard to the

They are to be brauded on the whole as mischievous, and probably interested, fictions, which have misled honest and painstaking geographers, have impeded research, and, so long as the imposture remained unexposed, have placed an insurmountable obstacle in the way of the true delineation of the hydrography of the Upper Oxus.

The present inquiry naturally opens with a glance at the antiquities of the region in which the Oxus takes its rise. There is no need of an elaborate discussion, for the subject has been extensively, not to say exhaustively, treated both by Humboldt and Ritter; but I still desire to draw attention to certain points which do not seem as yet to have received sufficient consideration. The region, then, I may say, which embraces the head-waters of the Oxus is not of less interest geographically and politically than it is on account of its connection with the primitive traditions of the Aryan race. Whether Bournonf may or may not be right in regarding the term *Pâmîr* as a contraction of *Upâ Mēru* ("the country above Mount Meru"),* and in thus associating the name directly with the holiest spot in the Brahmanical cosmogony, it is certain that the geographical indications of the *Purānas* do all point to this quarter of Central Asia as the scene of the primeval Aryan Paradise. Professor Wilson, in narrating the ordinary version of the Puranic story, which describes the division of the Ganges into four great streams as it falls from heaven on Mēru and flows on to the surrounding worlds, remarks that, "considered in any but a fabulous light, Mount Mēru appears to mean the highland of Tartary, immediately to the north of the Himālaya Mountains;"† and if we

remarkably correct description of *Kafiristan*, which is given in the German Baron's 'Memoir,' and the citation of actual words from the *Kafir* language, I can only suppose that the author borrowed from Mollah Nejib's 'Memoir,' published in the Appendix to Elphinstone's 'Cabul,' vol. ii. p. 373; but in that case the Russian MSS. must be later by some years than the date which it bears of 1806, as Elphinstone's first edition was published in 1814. M. Khanikoff has recently stated to me, as a further argument in favour of the authenticity of the Baron's travels, that his map contains an accurate delineation of the famous Iskender Kûl, in the valley of the Zar-afshan, which is a recent discovery, and was not even known to geography when Lehmann surveyed the district in 1840; but I have pointed out in reply that Klaproth may very well have obtained a knowledge of this picturesque Alpine lake from Baber's 'Memoirs,' where it is accurately described, though the locality has not hitherto been recognised, owing to Erskine having read the name as *Kân* instead of *Fân*.—See Baber's Mem., Eng. translation, p. 85.

* 'Asie Centrale,' tome i. p. 104, and tome ii. p. 390. My own conjecture is that the name of *Pâmîr*, or *Fûmîr*, as it is always written by the Arabs, is derived from the *Fâni* (Φάνοι), who, according to Strabo, bounded the Greek kingdom of Bactria to the east (Strab. lib. xi. c. 14), and whose name is also preserved in *Fân-tâû*, the *Fân* Lake, &c. *Fûmîr*, for *Fân-mîr*, would then be a compound like *Kash mîr*, *Aj-mîr*, *Jessel-mîr*, &c., signifying, "the lake country of the *Fâni*."

† Sanscrit Dictionary, in voce *Mēru*.

had only the Sanserit authorities to consult, this general explanation would be all that we could safely accept. But we are fortunately not limited to Sanserit geography. The Purānas were supplemented by the traditions and travels of the Buddhists; and in these later sources of information we often find evidence of so direct a nature as almost to meet the requirements of modern science. Thus, in regard to the four rivers of the Aryan Paradise—which were named by the Brahmans, 1. The Sita; 2. The Alakananda; 3. The Vakhshu; and 4. The Bhadra*—the Buddhists varied both the order and the nomenclature, classing the four rivers as—1. The Ganges; 2. The Indus; 3. The Oxus; and 4. The Sita;† and further deriving these from a great central lake, which was named *A-neou-la*, and one of the representatives of which was either the Kara-kūl or the Sarik-kūl Lake of Pamir.‡ The learned Buddhist traveller, indeed, Hiuen-tsang, who was profoundly versed in the religious antiquities of his people, and who visited

* See 'Vishnu Purana,' p. 170, and Siddhanta Sironani. Professor Wilson considers the *Sita*, running to the east, to be the Hoangho; the *Alakananda*, running to the south, to be the main stream of the Ganges; the *Bhadra*, to the north, to be the Obi of Siberia; and the *Vakhshu* (or, as he writes it, the *Chokshu*), running to the west, to be the Oxus. Wilford, in examining the same legend ('Asiat. Res.' vol. viii. p. 313), agrees with Professor Wilson as to the Ganges, the Oxus, and the Hoangho, but would substitute the Jenisea for the Obi, as the representative of the Bhadra. If any Siberian river, however, was known to the Indians, it was probably the Irtysh, which is mentioned by Masudi in both his works: "The meadows of gold," and the *Tenbih*, though strangely enough his French and English translators have neglected to compare the two accounts. (See 'Les Prairies d'Or,' tome i. p. 213; Sprenger's 'Masudi,' p. 244; and 'Not. et Ext. des Man.,' tome viii. p. 154.) With regard also to the identity of the *Sita* with the Hoangho, it is necessary to explain that the *Sita* (usually derived from *Sita*, "cold," but more probably meaning "yellow.") represented properly the river system of Kashghar and Yarkend, which disembogued in Lob Nor, and that it was only because the Chinese imagined the water of the lake to pass underground, and give rise to the Yellow River, some 1000 miles to the eastward, that any connection could be suggested between the two names.—See 'Vie et Voyages de Hiuen-tsang,' p. 273.

† The various orthographies of these names are given by Remusat as follows:—

	Ganges.	Indus.	Oxus.	Sita.
Indian ..	Ganga.	Sindhoo.	Vakshon.	Sita.
Chinese ..	Heng-kia.	Sin-tou.	Fo-thsou.	Si-to.
Mongol ..	Ganga.	Childa.	Baktchou.	Aripara.
" ..	Ganga.	Sidda.	Bakteli.	Chida.
Thibetan ..	Gan-hgis.	Sindhon.	Paktelhoo.	Sida.

(See 'Foe-kone-ki,' p. 36.) The vernacular *Vakhsh* exactly reproduces the original Sanserit name of the Oxus; and although the name of *Sita*, or *Sida*, for the eastern river is now lost, it occupies a prominent place in the geography of the Hindush. Wilford ('Asiat. Res.,' viii. p. 322) confounds the third and fourth river of the Buddhists, making the *Pakhu* (for *Pakehu*) the Brahma-putra, and the *Sita* the Oxus.

‡ The other representative of this lake—for Buddhist tradition varied regarding *Anaoudata*, as Brahman tradition varied about *Mdnasarauear*—was the *Ravana-hrada* of Thibet. (See 'Asie Centrale,' ii. p. 418, 'Foe-kone-ki,' (Klaproth's note) p. 37; Wilford in 'Asiat. Res.,' viii. p. 327 seqq.)

the sources of the Oxus on his return from India to China in A.D. 644, recognised in the Tsong-ling, or Pamír chain, the Sú-mérú of his national cosmography, occupying the centre of Jambú-dwípa; and further stated that the great lake in the centre of the plateau—known to the Chinese as the Dragon Lake—from which one stream flowed westward to the Po-tsú, or Oxus, and another eastward to the Sito, or River of Kashghar, corresponded to the *A-neou* (or *Anava*) of the Sacred Books.* Strictly speaking, of course, it is impossible to name any particular lake, or even lake district, in Central Asia, from which four great Asiatic rivers may be said to radiate; but Wood, in repeating the popular notion of Pamír geography which he found to be current in the country, has no doubt furnished us with an explanation of the origin of the old legend of a four-rivered Aryan Paradise. He observes that "The hills and mountains which encircle Sir-i-kol (Lake Victoria) give rise to some of the principal rivers in Asia. From the ridge at its east end flows a branch of the Yarkend River, one of the largest streams that waters China; while from its low hills on the northern side rises the Sirr, or River of Kokan; and from the snowy chain opposite, both forks of the Oxus, as well as a branch of the River Kuner, are supplied."† Now, if this

* See 'Vie et Voyages de Huen-tsang,' p. 272. Reinaud has already drawn attention to this passage in his Introduction to Abulfeda's 'Geography,' p. 216. Mous. Julien supposes the Chinese notice to refer to Wood's lake, improperly called Sir-i-kol, and it is quite possible he may be right, as this lake is far nearer the direct line of route, east and west, than the northern lake of Kara-kúl. Klaproth, however, has always taken it for granted that the Dragon lake of the Chinese is Kara-kúl; (comp. Beal's 'Fa-hian,' p. 182; and see Klaproth's 'Carte de l'Asie Centrale,' 1836.) Humboldt discusses the question at length in his 'Asie Centrale,' tom. ii. pp. 404 to 412, and inclines on the whole to identify Wood's Sir-i-kol with the Dragon Lake of the Buddhist travellers. Klaproth, indeed, seems to have preferred the Kara-kúl as the representative of the Dragon lake, mainly because he believed the Yaman-yar, or river of Kashghar, to issue from it; but Hayward throws the greatest doubt on this presumed source of the Kashghar river, and further denies that any such name as Yaman-yar is known in the country. It would be curious to ascertain where Klaproth first found the name of *Yaman-yar*. It certainly does not occur in the Tarikh-i-Rashidí, where most of the streams of this river-system are named; and Valikhanoft, who alone of modern travellers employs the title, admits that he took it from the Russian maps.—('Russians in Central Asia,' p. 116.) Gardiner names the Yaman-yar ('As. Soc. Journ.' for 1853, p. 296), but his evidence is never of much weight. In the Foreign Office MS. *Yamanyar* is said to mean "having bad banks." Klaproth may have taken the name from a genuine Chinese authority; the same sources having furnished him with the name of *Derbitchek* for the northern arm of the Kashghar river, and with that of *Dimangasa* for a town on the Upper Indus.—('Russians in Central Asia,' p. 523; 'Mag. Asiatique,' tome ii. p. 228. It is to be observed that Huen-tsang uses the abbreviated form *A-neou* (for *Anava*) instead of the full name, *A-neou-tha* (for *A-neou-tatta*, "not lighted"); but he certainly means the same place. Wilford employs the vernacular form, *Anaudat*.

† Wood's 'Source of the River Oxus,' p. 356. Burnes had already, with a still greater latitude of description, derived the Jaxartes, the Oxus, and a branch of the Indus directly from Lake *Surkol*.—'Travels to Bokhara,' vol. iii. p. 180.

not only by the general order and distribution of the geographical list, but by the direct evidence of a very competent authority, the famous Abu Rihan El-Biruni, who says that even to his day (about A.D. 1020) the same old title survived amongst the Zoroastrian population of the province. "In the same way," he observes, "that at this place (below Multán) they call the united streams (of the Indus) 'the Five Rivers' (modern *Penj-áb*), so the several streams which flow from the northern side of the same mountains are called, when they unite near Termid and form the River of Balkh, 'the Seven Rivers.' The Magians (*i. e.* Zoroastrians), indeed, of Sughd make no distinction between these several rivers, but call the united waters the 'Saba' Sind' (*i. e.* the Seven Sinds or rivers)." *

It is possible that a critical examination of the geography of the *Puránas*, such as was contemplated by Abel Remusat, and partially executed by Wilson, in his 'Notes to the Vishnú Purána,' † might lead to some curious results as to the period and track of the various Aryan migrations, especially if the Puranic names were carefully compared with those preserved in the 'Vendidad,' the 'Yashts,' and the 'Bundehesh;' but the inquiry would need to be conducted with much caution, for not only is there a large admixture of the fabulous element both in the Zend and Sanscrit lists, but the names also are often so disfigured by a vicious orthography as to be hardly recognisable. A notable instance of this corrupt reading occurs in the name of the river which occupies the third place both in the Brahmanic and the Buddhist lists, and which, from the

to the identifications, however, of these scholars, the three last names of the 'Vendidad' list will be Demavend in the extreme west, India in the extreme south, and Jaxartes in the extreme east, which I venture to assert is an impossible distribution in a catalogue evidently based on geographical order and contiguity. The 'Vendidad' list, like the 'Bundehesh' lists of rivers and mountains, closes unquestionably with localities which are all in the extreme east, and this alone is fatal to the identification of the *Hapta Hendu* with India. I would propose in preference to identify *Ragha* with Badakhshan, *Hapta Hendu* with the Upper Oxus Valley, and *Raṅgha* with the Pamir plateau, where there are two lakes which still retain the name of *Riang-kul*.

* It is singular that neither Sir Henry Elliot, who first translated the portion of the 'Jami'-ut-Towarikh,' in which this extract occurs, nor his recent editor, Professor Dowson, should have noticed the connection between the *Saba'-Sind* of the Arab historian and the *Hapta Hendu* of the 'Vendidad;' but when once attention is drawn to the passage, I feel sure there cannot be two opinions on the subject. I have consulted the India House MS. copy of the 'Jami'-ut-Towarikh,' and have translated accordingly.

† See 'Foe-koe-ki,' note 1 to ch. viii. p. 46. Professor Wilson alludes to this challenge of Remusat's in his article on the Buddhist travels, 'Journ. Royal Asiat. Soc.,' vol. v. p. 115, and anticipates that Lassen's 'Indische Alterthumskunde,' then in the course of preparation, will meet all the requirements of the case; but in reality there is more of Puranic geography in Professor Wilson's own notes to Book II. of the 'Vishnú Purána,' than in Lassen's entire work.

description, has been always identified with the Oxus. From the time of Wilford to the present day, no one seems to have ever doubted that the Sanscrit name of this river was the Chakshu, and much profound speculation has been wasted on the possible derivation of the title; but it now turns out that the first letter च, *ch*, is an error of the copyists for क, *v*;* and that the true reading of the Sanscrit term is *Vakshu*, answering to the Ὠξός of the Greeks, to *Bakshu* in Mongolian, *Pakshu* in Thibetan, *Fo-tsu* in Chinese, and *Vakhsh-âû* or *Vakhsh-âb* in modern Arabic and Persian geography.† I shall not pretend

* Wilford was the first to familiarize Sanscritists with the orthography of *Chakshu*, which he employs throughout his famous 'Essay on the Sacred Isles of the West' (see 'Asiat. Res.', viii. pp. 313, 330, 336, 358, &c.), and which with his usual fondness for fanciful etymologies, he insists on comparing with the modern name of *Kokcha* (probably *Geuk-chdi*, "blue river"), now applied to the river of Badakhshan. He gives, however, the more correct reading of *Sû-Bakshu* (from the 'Vayu and Brahmanda Puranas,' As. R., viii. pp. 358 and 362) for the mountains at the source of the Oxus, the name being the same as that which is written *Sû-chakshu* in the 'Ramayana,' lib. I. xlv. pp. 14, 16; that is the name of the river, with the intensive prefix *sû* as in *Sû-merû* for *Mêru*, &c. Wilson also reads *Chakshu* everywhere in the 'Vishnu Purâna,' though he admits in a note that the printed copy of the 'Bhâgavata,' and the MS. Padma have *Bankshu* (for *Bakshu*).—'Vish. Pur.,' p. 171, note 12. The word *Chakshu* is not given in his 'Dictionary,' but he again adopts that reading under *Mêru*. In the 'Siddhanta Siromani,' also, Colebrooke and Wilkinson have both read *Chakshu* without suspecting any error.

The necessity of correction has been first brought to my notice by Dr. Kern, who, in the Commentary of Utpala on the *Bṛhat Sanhita*, c. 32, finds in a list of Northern tribes the *Videhas*, the Kashmirians, Dards, and people living on the *Vakshu*, all classed together. This orthographical error, however, of *Chakshu* for *Vakshu* must have been very ancient, since *Dirîni*, early in the 11th century, copying from the 'Ramayana,' gave the reading of جکش *Jaksh* (for *Chakshu*,

as the Arabs have no *ch*).—See 'Historians of India,' vol. i. p. 51. For the Chinese, Mongolian, and Thibetan forms of the name see 'Foc-koue-ki,' p. 37. The etymology of the name of the Oxus is obscure. Neither of the Sanscrit roots, *Uksh*, "to sprinkle," nor *Vaksh*, "to be angry," are appropriate themes; and I am rather inclined, therefore, to adopt the Persian explanation, that *Vah*, "pure," is the original form of the name, which was first strengthened into *rakh*, and then completed by the addition of *ish*, as in *Wag-ish* (cf. Wood), *Badakh-ish*, *Ish-terakh*, *Ish-keshm*, *Ish-kemish*, *Ish-kol*, *Ish-kotel*, &c. &c.

† Whether *Vakhsh* be developed from *Veh* (the Pehlevi name for the Oxus), or *Veh* be contracted from *Vakhsh*, there can be little doubt, I think, but that the two names are etymologically connected; indeed, we have the intermediate forms of *Vakh* in *Vakhdb* and *Vakhdn*, and of *Vash* in *Vashjird*. The Chinese names for the river are *Wai* (Remusat's 'Nouv. Mém.' tome i. p. 217), *Ou-hou*, or *Ou-hiu* ('Mag. Asiat.' tome i. p. 106), and *Fu-tsu*, or *Fo-tsu* (Huen-tsang, *peregrin*). It has sometimes occurred to me that, as in modern times, the Oxus has taken the name of *Amu* from the town which commanded the great passage of the river (compare also the name of Kilis given to the river by Masûdi from the ferry thus entitled): so in the very earliest ages it may also have been named after the tribe who dwelt in this same position. The tribe in question would, I suppose, have been the *Vai*, who founded *Vai-kend*, or *Baikend* (the earliest inhabited place in Sogdiana, according to Persian tradition, see Khanikoff's 'Ethnographie de la Perse,' p. 40), in the fertile district where the river of *Sughd* approaches the Oxus, and is lost in irrigation. With this name of *Vaikend*, or "town of the

to follow all the Purānic notices of the Oxns and the region which it traverses, but a few attempted identifications may be of interest. It is highly probable that Pamír and Méru are of kindred etymology, both the names being connected with *Mir*, "a lake;"* and we may also recognise in the name of *Halavérd*, which was the capital of Khutl in the early ages of Islam, the modern form of the old mythic title of *Navratta*, which applied to the circular plain on the summit of Méru.† The name of Kétn-mála, which in the Purānas designates the entire region west of Méru from Pamír to the Caspian, has no representative, I think, in modern geography; but the mountain ranges which bordered the Oxus, and the tribes which inhabited the neighbouring country, are indicated for the most part by names which either exist at the present day, or can, at any rate, be traced in comparatively recent times.

The most detailed list of mountains, illustrating the course of the Vukshú, or Oxus, is given in the Brahmanda Purāna, and is as follows:‡—1. *Sikhi-kanka*; 2. *Vaiduraya*; 3. *Capila*;

Vai," I would further compare the *Vuckereta* of the 'Vendidad,' which has the same meaning, and which, as it is interposed, in the seventh place, between *Haroyu*, or Herat, and *Urein*, or Urganj, must necessarily represent the lower valley of the Oxus. Observing, again, that Hsuen-Tsang applies the name of *Fa-ti* to this settlement between Bokhara and the Oxus, I suppose that *Vai-kend* may have been sometimes known by its equivalent Persian name of *Vai-deh*; and lastly with this name of *Vai-deh* I would compare the Sanscrit ethnic title of *Videha*, which is associated with the dwellers on the Oxus in the passage already quoted from the 'Commentary of Upala,' and which also occurs among the northern tribes in the 'Vishnú Purāna,' in connection with the Sacas, or Scythians, 'V. P.' p. 188. There are difficulties, at the same time, in etymologically connecting *Vai* with *Veh* and *Vakh*, and also in explaining how if the tribe in question merely dwelt on the lower river, all the present traces of the name should be found in the region of the Upper Oxus.

* *मीर* *Mir* in Sanscrit is properly "the ocean" (compare Lat. *mare*; Fr. *mer*, &c.), but the term is also used for "a lake," as in the names of *Kashmir*, *Ajmir*, *Jesselmir*, &c. I am not by any means satisfied with Bournouf's derivation of *Pamir* from *Upa Méru*, "above Meru," and would prefer to explain the name as a contraction of *Fda-mir*; at any rate the *mir* in *Pamir* must mean "the lake country," the allusion being to the *Armoda*, the *Sitoda*, and the *Purnoda* of the Purānas, answering respectively to the *Sarik-kul* "the yellow, or ruddy lake," the *Kara-kul*, or "black lake," and the *Yeshil-kul*, or "green lake."

† Wilford has some unusually wild speculations about *Halavitta* ('As. Res.' viii. 318), which are really not worth quoting. *Halavérd*, which must have been on the Snrkhab or Vakhshab, probably at the spot now named *Kurghán teppeh*, is described by all the geographers, and will be further noticed in the sequel. It answers to the Greek Ἀλχοδρα.

‡ See Wilford's Essay, 'As. Res.' viii. 358. This account brings the Chakshu, or Oxus, from the *Sitoda* and *Purnoda* lakes, which names answer etymologically to the *Kara-kul* and *Yeshil-kul*, "the black lake" and "the green lake." (शिति, *Siti*, "black," and पल *Parn* "to be green"), and from the *Su-Bakshu* mountains, before the other list commences. Wilford recognises the *Sitoda* as the main source of the river, but strangely enough he tries to identify the *Purnoda* with the Caspian. According to M^d. Amin, however (Davies'

4. *Gandha-madana*; 5. *Pinjara*; 6. *Cumida*; 7. *Madhu-manta*; 8. *Anjana*; 9. *Mucita*; and 10. *Crishna*; the four first names in the list being also repeated in a more trustworthy authority, the '*Vishnú-Purána*.* Of these names,—1. *Sikhi-Kauka*, or *Sikhi-vasas*, probably survives in *Shiknan* (*Shagnan* of Wood, and *Shi-ki-ni* of Hinen-tsang), the rocky country on the right bank of the Penj;† 2. *Vaidúrya*, which means *Lapis-lazuli*, is, as has been already shown by Bournouf, the original of the modern title of *Belúr*;‡ 3. *Capilaś* is the *Capissa* of the Greeks, *Kia-pi-shé* of the Chinese, and modern *Cabul*; 4. *Gandamádana* a very celebrated name in the *Puránas*, and usually described as the western buttress of *Mérú*, has left many traces in the nomenclature of the Oxus region (compare *Mount Gaud* of the *Bundehesh*; *Ghandamir*, the source of the Oxus, according to *Ibn Fakih*; *Ghand*, joined with *Shignán* and *Pamir* in the *Matla'-es-Saadein*, and modern names of *Ghandrúb*, *Gandakúl*, *Gandushkán*,|| &c.);

* Reports, Appendix, p. 333), the *Yeshil Kúl*, well known to the Chinese ('*Mag Asiat.*' tome i. 93), is between Wood's lake and the *Kora-kúl*, and is usually called *Houz-i-Sares*. I should wish to read this name *Houz-i-sals*, which would have the same meaning as *Yeshil-kúl*, "the green lake," but fear the correction is too violent, as *Md. Amin* uses this same orthography of *Sares* in a dozen different passages. At the same time it must be remembered that the name of *Sares* for a division and lake of *Pamir* rests on *Md. Amin's* sole authority.

* P. 169.

† *शिक्षा Sikha* in Sanscrit is "a crest," or "peak," and the name, therefore, is particularly suitable to the rocky ranges of *Shiknan* and *Shakh-dereh* (probably from the same root), to the north of the bed of the Oxus. For the Chinese *Chi-ki-ni*, see '*Hluen-Tsang*,' pp. 270 and 365. The name is not much used by the geographers, but is to be found, perhaps, in the very corrupt list of *Ibn Khordadbeh*, and again in *Birún's* '*Kanún*,' where *Ishkeshem* is called the capital. The later orthography of the *Matla'-es-Saadein* is *Shignán*, '*Not. et Extr.*' tome xiv. p. 224.

‡ '*Asie Centrale*,' tome ii. p. 372. In my article on Central Asia in the '*Quarterly Review*' (No. 240, p. 480, note), I threw doubt on this derivation, but further study has led me to adopt it. Bournouf does not connect the name of *Vaidurya* for the "*Lapis Lazuli*," with the mountain *Vaidurya* of the *Puránas*, but Wilson seems in his '*Dictionary*' to derive the one from the other, giving for the etymology of *Vaidurya*, the "*Lapis Lazuli*"—"Vidur, said to be the name of a mountain where the stone is found." I shall consider the difficult subject of the geography of *Belúr* further on.

§ *Kapila* and *Kapisa* are connected in Sanscrit, one signifying "tawny," and the other "brown," and both referring to the colour of "an Ape," *Kapi*. The modern representative of *Capissene* is *Kafshán*, a large mound at the mouth of the *Ghorbend Valley*, from whence a good pass leads over the *Hindú-Kúsh*. The *Kia-pi-shé* of the Chinese extended at some periods from the *Hindú-Kúsh* to the *Indus*.

|| The position of *Gandha-madana* is variously stated in the *Puránas*. The authorities followed by *Wilford* place it to the west of *Meru*, along the Oxus, and overhauling *Ketu-mala*, but *Wilson* says it is "a mountain forming the division between *Hávrítta* and *Bhadráswa* to the East of *Meru*." *Comp. Sans. Dic.* in voce with *As. Res.* viii. pp. 326, 359, &c. The reading of *Ghandamír*, غندامير, for the source of the Oxus, according to *Ibn Fakih*, is doubtful (see *Yacut's Lex.* in voce *Jihán*; and *Jnynboll's* '*Lex. Géograph.*' tome v. p. 134, where the reading

5. *Pinjara** may be *Penjhir*, north-east of Cabul; 6. *Kumûda* is certainly the Comedi Mountains of Ptolemy, *Kiu-mi-tho* of the Chinese, and *Kumid* of the Arabs.† Of *Mad-hâmanta* and *Mucûta* I can say nothing at present; but the other two names, *Anjana* and *Crishna*, merely signify "the black mountains," and thus apparently denote the southern slopes of the Hindû-kûsh on the left bank of the Cabul River, which were similarly designated by the Chinese.‡ Of the tribes or countries through which the Oxus flowed, I have only met with two lists: one given by Wilford from the Vayu-Purâna, and the other, copied apparently from the Ramâyana, by Abu Rihân, and now only available in an Arabic disguise. The names in the Vayu-Purâna are—1. *Chinamanu*; 2. *Tangana*; 3. *Sarva-Kalica*; 4. *Sandhra*; 5. *Tushâra*; 6. *Lampaca*; 7. *Pahlava*; 8. *Darada*; and 9. *Saca*.§ Of these, 1. The *Chinamanus*, represent, not the Chinese, as Wilford fancifully supposed, but the "left hand," or northern men, in opposition to the Dakshanis, "right hand," or southern men; || 2. The *Tan-*

is *Andemas*, عند مس, as adopted by Sir W. Jones; 'Works,' vol. xii. p. 148, and commented on by Wilford in his usual style; As. Res. viii. p. 331; but the name of *Ghand* is certainly used for the district between Shighân and Pâmîr in the Matla'es-Saadein, being attested by my own MS. 'History of Khorassân' which is rigidly correct, though Quatremère proposes to alter the reading to *Waghand* or *Wakhan* 'Not. et Ext.' tome xiv. p. 491. For the other names see Davies's 'Reports,' Appendix, pp. 356 and 366.

* *Pinjara* in Sanscrit means "yellow," and is especially applied to "Gold" or "Yellow orpiment," but I observe in Aryan Geography that the name of *Penjhir* is always connected with silver mines. The mines of *Penjhir* at the eastern source of the Cabul River have been always famous, and I find a notice in Ash-Shazri's Akhbar-el-Baldân of another *Penjhir* celebrated for its silver mines seven farsakhs from Shâsh or Tashkend.

† Wilford repeatedly notices the *Kumûda* of the Puranas, answering to the Comedi Mountains of Ptolemy.—As. Res. viii. pp. 326, 332, 362, &c. For the Chinese *Kiu-mi-tho*, see Julien's 'Si-yu-ki,' tome i. p. 27. I have only met with the Arabic *Kumid* in Ibn Dusteh, but *Kum* is the name still commonly applied to Darwâz on the Oxus.

‡ See Julien's 'Hien-Tsang,' pp. 71 and 75. In the Bundeesh also ('Zend. Av.' tome ii. p. 366) *Siâh-humend* and *Wâser-humend* are the names of the range which runs from Cabul towards China, the *Siâh-humend*, or "black mountains," answering to the *Anjana* and *Crishna* of the Purânas, and the *Wâser-humend* or "snowy mountains" to the *Hemakûta*, south of Mëru,—'Vish. Pur.' p. 167. The same distinction of "the black mountains" and "the snowy mountains" was also observed by the Chinese.

§ As. Res. viii. 336.

|| No one seems to have ever doubted that the *Chinas* of the Puranas were China-men, and Wilson even argues from the name that the date of the Vishnu Purâna must be limited to a.c. 260, as that was the date of the Tsin dynasty from which China derived its name; but comparative philology assures us that *Dek* and *Chin* must have been the old Aryan roots for "right" and "left," Dexter and Sinister being for *Dek-is-ter* and *Chin-is-ter*; and although this power of *Chin* is now lost in Sanscrit, I cannot doubt but that it once existed and indicated the northern tribes, just as *Dek-shin* or "Deecan" indicated the southern country. See 'Vish. Pur.' p. 194, note 145.

ganas, though often mentioned, are not easily identified,* but with the name of *Kalica* we may compare both the *Kálik Pass*, leading across the great range from Gilgit,† and also perhaps the *Kalash* division of the *Siyahpúsh* Castles, who are possibly the *Calcias* of *Benedict Goetz*;‡ 4. The *Sandhras*, again, are obscure, but the remaining names are all well known.§ From 5. *Tushára*, we have *Toxapou* and *Tocharistán*; || 6. *Lampaca* is *Lamghan*; ¶ 7. *Pahlava* (*Pahva* of *Wilford*) was probably the same as the Persian *Pehlevi*; ** and the *Daradas* and *Sacas*, 8 and 9, *Dards* and *Scythians*, are standard names in the ethnography of Upper India.†† The Arabic names which are preserved in the extract from *Abu-Rihán* contained in *Rashid ed-Din*, and which are supposed to have been originally taken from the *Ramáyana*, are so disfigured that neither *Sir H. Elliot* nor his recent editor, *Professor Dowson*, have attempted to identify them; but I would suggest the following readings, in which it will be seen the orthographical corrections are by no means violent:— 1. *Sarva-Kalica* (3 in the *Vayu*); 2. *Fahlavak* (compare *Bahlika* or *Pahlava*, 7 in *Vayu*); 3. *Tokhára* (5 in *Vayu*); 4. *Barbar* (compare *Barbarrak* of *Wood*, p. 395); 5. *Kabuj* (compare *Kamboja* of *Purána*s and *Kaubenj* of Arab geography); 6. *Tangán* (2 of *Vayu*); 7. *Révasir* (*Rivasarán* of *Ibn Fakih*); and 8. *Anjan* (the “black mountains” of the *Brahmánda Purána*).‡‡

* *Tunganas* and *Paratunganas* are joined with *Yavanas* (Greeks of *Bactria*) *Chinas* and *Kambojas* in the ‘*Vishnú Purána*,’ p. 193, and the *Ramáyana* has also *Tunganas* in the north, but *Wilson* does not attempt to identify them.

† See *Davies’s ‘Reports,’ Appendix*, p. 356.

‡ *Kalika* in Sanscrit कालिक is “dark-coloured,” and is probably the original of our modern term of *Siyah-púsh*—“wearing black.” The *Kalash* tribe is mentioned by *Md. Amin* (*Davies’s ‘Reports,’ Appendix*, p. 362), as well as by *Gardiner* and *Raverty*. I do not rely much on the identity of the *Kalash* with *Goetz’s Calcias*, as I cannot trace the old missionary’s route at all from the *Hindu-Kúsh* to *Pámir*.

§ The name of *Sandhira* would become *Hundra* in Persian, and may perhaps still be traced in *Ander-ah*, the *Arđpaw* of the Greeks.

|| For the *Tushára* or *Tukhára*, see *Wilson’s ‘Vishnú Purána,’* p. 195, note 157.

¶ See the references in *Reinaud’s ‘Mém. sur l’Inde,’* p. 118, note 8.

** The *Pahlavas* occur in all the lists as a tribe between *Persia* and *India*. ‘*Vish. Pur.*’ p. 189, note 61, but the name is of doubtful etymology.

†† See ‘*Vish. Pur.*’ p. 195, note 153, and p. 188, note 43.

‡‡ The names are variously written in the several copies of the *Jamī-ut-Towarikh*, but the following may be taken for the normal types from which the readings that I give from the *Vayu* do not, it will be seen, essentially differ. ‘*Historians of India,*’ vol. i.

Biruni.

True Forms.

1. مروو كالك صروو كالك *Sarra-Kalik.*

2. دهولك فیهولك *Fahralak.*

3. تكار تخار *Tukhara.* [Biruni]

I shall have occasion to make further reference to Puranic geography as I proceed with the examination of the Oxus, but in the meantime, it is of more interest to compare a few notices from the 'Vendidad' and 'Bundehesh.' The names in the first chapter of the 'Vendidad,' which fix the territorial circumscription of the primitive Perso-Aryan settlement, and are thus of the highest ethnographical importance, are many of them still obscure. In addition, however, to the two identifications which I have already made, and which I venture to think are beyond dispute, namely, that *Urvan*, the eighth creation of Ormazd represents Urganj, and *Hapta Hindu*, the seven sources of the Oxus, I would further suggest that the concluding names of the series must be sought amongst the most eastern localities of the Zoroastrian world, *Raga* being the district of *Ragh*, the most fertile portion of Badakhshān, while *Varena*, "the squared," may be the "Tetrapolis" of Cabul, which would not otherwise be represented, and *Raŋgha* of the east, with its independent horsemen or nomads, may be the Alai and Northern Pamir Plateau, extending from Riāng-kūl to Rasht.* But

	Hebrew.	True Form.	
4.	ברבר	بربر	<i>Barbar.</i>
5.	کاج	کابج	<i>Kabuj.</i>
6.	تکن	تنکن	<i>Tangan.</i>
7.	بنوبار	ربوسار	<i>Riransar.</i>
8.	انجن	انجن	<i>Anjan.</i>

Of course many of these restorations are pure guesses, and are given with due reserve. No. 1 is a double name in the Vayu, but two different names in the Arabic; which is right I do not venture to say. Wilson compares *Bahlān* with *Balkh*, 'Vish. Pur.' p. 191, note 88, and perhaps *Pahlava* may be a form of the same name. No. 2 name, however, may possibly be *Dek-Wāliq*, the والج

Wāliq of the Arabs. For *Barbar* and *Kabuj*, See 'Vish. Pur.' p. 192, note 99, and p. 194, note 146. In the Arabic the two names are joined together, and certainly the *Kabunj* of the geographers must have been in the immediate neighbourhood of Wood's *Barbarra* if they were not the same place. I have no great faith in the three last readings, as the orthography varies so much in the different MSS. No. 7, *Riransar* or *Riransar*, will be noticed hereafter.

It is very important to observe the general law of geographical distribution which determines the order of the names in the *Vendidad* list. Guided by this clue, I have already pointed out that the 7th name *Vokeret* (*Vagart* or *Valkend*) must needs represent the middle valley of the Oxus, interposing as it does between Herat and Kharism; and I would now further suggest that it is equally clear the 12th name which follows *Haetumat* or the Helمند, must indicate some neighbouring province instead of being applied, as all the commentators have hitherto insisted, to the western position of Rhages, which was far beyond the confines of the Zoroastrian world. I would propose, then, to compare *Raga* with the modern *Ragh* of Badakhshān, a name which is certainly ancient, and is probably found in the *Andija-ragh* of the early geographers. The 13th name *Chekhra* ought to represent the Hazareh mountains, but the only geographical name in that region which at all resembles the Zend title is *Sakhr*, and I am not sure that that is an old form;

whatever may be thought of these attempted explanations of the primitive geography of the Vendidad, we are on surer ground when we examine the names and the descriptions of the Bundeshesh. Doubts have been recently raised whether the Arg-rúd really represents the Tigris,* but no uncertainty whatever attaches to the other great liminary river of the Zoroastrians to the eastward. The Veh-rúd which received the tributary waters of the Teremet-rúd and Balkh-rúd, and passed by the frontier of Khorassán, can only be the Oxus, the name of *Veh* being perhaps a corruption of *Vakh*, which again may have been contracted from *Vakhsh*, the original of the *Oxos* of the Greeks.†

The great range of mountains again which extended south of the Veh-rúd from Seistán to the borders of China, and

the locality indicated, however, must have been, I think, at any rate not far from the source of the Helمند. *Varena* also, the 14th place, is very difficult of identification. It is called the "Quadrangular country," and was the birthplace of Feridún, on which account it has been compared with *Demaseid*; but the geographical indications point to the extreme east, and I would propose therefore to compare *Varena* with *Barueda* or *Parueda*, and to explain the epithet of Quadrangular as applying to the famous "Tetropolis" of Cabul, especially as the immediate neighbourhood of the castle of Zohák at Hamián accords with the tradition regarding Feridún. *Ruigha*, the last name on the list, is the most hopeless of all, as far as etymology is concerned. It has been identified with Assyria, with Rhé, with Khorassán and more recently with the valley of the Jaxartes, 'Zend Av.' i. 270, and ii. 242, and Khanikoff's 'Ethnog. de la Perse,' p. 37; but the last country alone suits its position as the extreme eastern limit of the Zoroastrian world. I suggest northern Pamír from the description, and the possible connection of the name with *Ramid*, *Rasht*, and *Riang-kul*.

* See Bournouf's 'Yaena, Additions et Corrections,' p. clxxxii. Bournouf labours hard to prove that the *Urrant* of the Zend books, which, according to Anquetil's reading, is named *Arg* in the Bundeshesh, really represents the Jaxartes, but his arguments are not convincing. At any rate it is quite certain that the Zoroastrians of the early ages of Islam understood the river in question to be the Tigris, rather than the Jaxartes, for Ferisí (Edic Macan, vol. i. p. 39) says distinctly that the Arabs name the Arvand, the *Dijleh*; and Hamzeh Isfaháni, who is a great authority on Zoroastrian antiquities, also gives two Persian names for the Arabic *Dijleh*, the *Areng-rúd*, which is probably a more correct reading than the *Arg-rúd* of Anquetil, and the *Kulek Daryn*, or "the little sea." (See Yacút in voce *Dijleh*.) Bournouf compares a number of similar names of Asiatic rivers, and derives them all from the Zend, *Urrat*, but one of these names, the Orontes of Syria, or *Aranat* as it is written in the inscriptions, is almost certainly Semitic, being formed of the generic *Ara*, "a river," the formative suffix in *na* and the usual feminine ending.

† *Veh* in Pehlevi is supposed to signify "pure," being the same term which occurs in *Vehesht* or *Bihisht*, "Heaven," but there is no Sanserit correspondent.

Vahá in Sanserit is a general name for "a river" from *Vah*, वह, "to flow," and this is probably the true origin of the name. There may, however, possibly have been two independent names for the river. *Vakhsh* (from वह्, "to be angry") applying to the upper part of the river, where its course is rapid and turbulent, and *Veh* (from वय् "to flow") applying to the river below the junction of the Kokcha, this double nomenclature exactly answering to the *Fu-tsu* and *Wei* of the Chinese.

from which so many streams descended to the south as well as to the north, affords a very interesting subject of inquiry. Its usual name in the Bundehesh is *Aprasin** (or according to a gloss, *Parés* for *Parésin*), which is the identical term used in the Babylonian translation of the inscription of Darius at Behistun, as the equivalent of the Persian *Gadara*.† *Paru-párac'sanna*, indeed, as the cuneiform title is read in full, is of course the true form of the Greek Παροπαμισος, or Παροπαμισος;‡ it means the mountains of *Paresina*, and adhered to the range in question as late as the seventh century, for Hsien-Tsang expressly says that he traversed the great Snowy Mountains and the chain *Pho-lo-si-na*§ in passing from Capissa to Anderab. Probably also the name of *Pashái*, ¶ which is applied both by Marco Polo and Ibn Batuta to the range of Hindú-Kúsh, and which still appertains to a tribe of mountaineers in the vicinity of Cabul, is a relic of the ancient title.

The valley of the Oxus, as the battle-field between Buddhism and Zoroastrianism for the period of a thousand years, is connected with many early Magian traditions. The fabulous *Kang-diz*, regarded by the vulgar as the region of the blessed, and removed by the geographers to the extreme eastern limit of the continent of Asia, probably owed its origin to some famous Buddhist settlement immediately beyond the Zoroastrian limits;¶ but whether this settlement may have been at *Tash-*

* 'Zend Avesta,' tome ii. p. 364, *eqq.* *Aprasin* seems, however, to include the whole mountain system of Eastern Persia, being prolonged from the Paropamisus in two branches, one south of the Caspian to the Taurus, and the other buttressing the Persian plateau from Seistan along the Gulf to Zagros.

† I have collected all the important authorities regarding the Indian *Gandhara* at Peshawer, in my 'Cuneiform Vocabulary; Journal, Royal Asiatic Society,' vol. ii. p. 125. In the distribution of the Satrapies of Darius, *Gadara* must be understood to include all the country between the Indus and Bactria.

‡ Dr. Oppert insists on regarding *Paru-parac'sanna* as an erroneous reading for *Paru-paranissanna*, which he translates "the mountains of the Upper Nisanna," deriving the name from the Nysa of the Greeks ('Expédition en Mésopotamie,' p. 202); but the paper east of the Behistun slab, which is now in London, and of which a facsimile taken by Pentagraph, is given in vol. iii. of the 'Cuneiform Inscriptions of Western Asia,' shows that my original copy was correct. For a full discussion of the Etymology of Paropamisus, which is a Greek corruption of *Paru-parac'sanna*, see 'Asie Centrale,' vol. i. pp. 103 and 114.

§ See 'Foe-kone-ki,' Appendix, p. 395. Lassen, in his 'Indische Alterthumskunde,' p. 27, note 2, suggests a connection between *Pholosina* and *Parapanisus*, but has overlooked the intermediate link of the Pehlevi *Paresin* or *Aprasin*.

¶ See Yule's 'Cathay,' p. 403. *Para-ai* may very well have become *Pash-ai*, as *Parushpur* has become Peshawer. Leech published a vocabulary of the Pashai language, one of the Sub-Aryan dialects in 'Journ. Asiatic Society of Bengal' for 1839, vol. vii. p. 731.

¶ For a full discussion of the very curious subject of *Kang-diz*, see Reinand's 'Introduction to Abulfeda,' pp. ccxx. to ccxiv. Reinand himself is inclined to compare the term *Kang* with the old Chinese name of *Kang-kiu* for Sogdiana; but it is a sufficient answer to this to remark that *Sughd* was the first and the principal Perso-Aryan settlement, whereas nothing can be clearer from the Bundehesh

Kurghán, which is still called the city of Afrasiáb, and is certainly a very remarkable place,* or in the vicinity of

and universal Zoroastrian tradition than that *Kang-diz* was beyond the Perso-Aryan world to the eastward. *Kang-diz* is everywhere connected in the Bundeesh, Istly, with the mountains of *Sejda* or *Bim*, of doubtful orthography, but certainly representing the *Tsing-ling* of the Chinese; and 2ndly, with the river *Shed*, which is of course the *Shida* of the Mongols, *Sida* of the Tibetans, and *Sita* of the Brahmans, running eastward from Mera, and identical with the river system of Yarkend and Kashghar. Compare the following passages "The *Shed-rúd*, where Pashkutan (son of Gushtasp) is in Mogulistan," "The river where Pashkutan is (i.e., the *Shed-rúd*) is in Kang-diz," "Pashkutan, called *Chitro-mino*, is in Kang-diz," "Kang-diz is to the east," "Mount Sejda contains Kang-diz," &c. 'Zend Avesta,' tome ii. pp. 364, 391, 393, 409, and 410. I long ago suggested that *Kang* was a Pehlevi word, signifying "Heaven," and answering to the Sanscrit

सङ्ग ('Journ. Royal As. Soc.,' vol. x. pp. 146 and 321), and perhaps this is after all the most reasonable explanation of the term; but it has sometimes occurred to me that as Biruni evidently considered *Kang* to be a proper name, translating *Kang-diz* as he did by "Kang's Castle" (see Reinaud, loc. cit.), it may possibly be a relic of the old name of Kanishka, or *Kanika*, which in the Arabic character is undistinguishable from the other title كند. There are some grounds for

supposing that Kanika (Kanerkes of the coins) derived his origin from Central Asia, and himself led the invading *Yue-chi* from Yarkend and Tashkurghán down the Chitrál Valley to the conquest of Northern India. At any rate he held the Upper Oxus and Little Tibet, whilst reigning over Peshawar and the Punjab, and I cannot help therefore referring to a city of his foundation the curious notice which is preserved by Mirza Hyder in his account of Kashghar and Yarkend in the *Tarikh-i-Rashidí*. "Formerly," he says, "there were several large cities in this plain; the names of two have survived; *Lub* (comp. *Lop-Nor*.) and *Kank*, but of the rest there is no trace or tradition; all is buried under the sand." I have lately observed from a note in Pauthier's 'Marco Polo,' p. 135, that Quatremère has already published this curious passage regarding the ancient cities of Cashgharia ('Not. des Manuscrits,' tome xiv. p. 494), having found it in the 'Haft Aklím,' into which work it had been copied from the *Tarikh-i-Rashidí*. Quatremère, however, has been guilty of a singular blunder in his further translation of the passage, speaking of the chase of *wild camels* in the Kashghar desert, instead of the chase of ostriches. Quatremère ought to have been aware that the ostrich is called "the camel bird" in Persian, and he might have also remembered that it is described under this title by the Chinese as a native of the Pamir steppes. (See 'Nouv. Mém. Asiat.,' tome i. p. 246, and 'Vie de Hiuen-Tsang,' p. 272.) The objection of course to there having really been a great city of Kanishka's in the vicinity of Yarkend, which furnished the Perso-Aryans with the germ of their *Kang-diz* myth, is the silence of the Buddhist travellers. Fa-Hian and Hiuen-tsang were both well acquainted with Kanishka; indeed, we derive our chief knowledge of that king, his era and his works, from their writings, and they in no instance associate his name with any of the remarkable buildings they saw about the *Tsung-ling* Range. Tash-Kurghán, however, does really seem to answer to the *Kie-cha* of Fa-Hian, as suggested by Colonel Yule and Mr. Beal, and Kanika is called in Mongol history, King of *Gachu*, which is probably the same word (though entirely unconnected with the apocryphal title of *Karchu*), and it is just possible therefore that Kanishka may be the ancient king of Ko-pan-to (country of Sirkál), who conquered Taksba-sila, or Taxila, and who was better known by his title of *China-dava-gotra*. See 'Vie de Hiuen-tsang,' p. 274. 'Fou-koue-ki,' p. 80. Beal's 'Fa-Hian,' p. 14, &c.

* Tash-kurghán is such a very remarkable place that it certainly deserves a special notice. The description given of it by M. Amin in Davies's 'Report,' Appendix, p. 327, is as follows:—"Tash-kurghán is a very ancient city, said to have been founded in the time of Afrasiáb, the celebrated King of Turan. It has of old been the capital of the Sar-i-kul territory, and the impregnable stronghold of its rulers. It is in a circular form, about a koss in circumference; its walls are

Yarkend, where the ruins of *Kank* or *Kang* mark the site of an ancient capital, or still further to the eastward at Khoten, which was the head-quarters of early Buddhism in this part of Central Asia, I cannot pretend to say. There are many notices of fire-temples in the Bundelesh, which probably relate to the region of the Oxus; as, according to Magian tradition, Zoroaster dwelt at Balkh, and his proselytizing efforts first came into operation in this quarter of Asia. For instance, the Mount Revand, where the famous Bourzin fire, lighted from the thunder-bolt, was established by Gushtasp, and which was only nine farsakhs distant from Goand (or *Kopanto*, modern Tash-kurghán), may very well be compared with the *Riran-sar* of Ibn-el-Fakih and Birúni, which must have been in the position hitherto occupied by the Pusht-i-khar of the maps.* The Mount Kharesem

built of unusually large blocks of hewn stone, and it is situated in an extensive open plain." It was no doubt owing to the massive materials of which it was built that it received the name of *Tash-kurghán*, or the "Stone Fort;" and it seems to have every claim to represent the *λιθινος πύργος* of Ptolemy, where the caravans rendezvoused before entering China, in preference to Tashkend or Oosh, which have been selected as the site of the Stone Tower by other geographers. (See '*Asie Centrale*,' tome i. p. 135; Reinaud's '*Abulfeda*,' Introd. p. 369, with reference to Birúni; Wilford in '*Asiat. Res.*' vol. viii. p. 323, &c. &c.) The country of which Tash-kurghán was the capital was known to the Chinese as *Ko-panto* (or *Pan-to* or *Han-pan-to*), a name which, whatever may be its Aryan etymology, is probably identical with Mount Goand of the Bundelesh, which was a part of Aprasin or Paropamisus, and was the bulwark of Gushtasp (i.e. the Zoroastrian world) to the East. (See '*Zend Avesta*,' tome ii. p. 367; '*Vie de Huen-tsang*,' p. 273; Beal's '*Buddhist Travels*,' p. 182; '*Foc-koue-ki*,' p. 24, &c.) The *Kie-cha* of Fa-hian, which was passed between Kuki-yar (south of Yarkend) and the ascent of the great range at the Darkote Pass, can hardly be other than Tash-kurghán (and indeed in no other town in that region would Buddhism have been found in so flourishing a condition); but we must be careful to avoid Mr. Beal's error of comparing the Chinese name of Kie-cha with the *Karchu* of the maps. I have some doubts if the latter name did ever apply to Tash-kurghán, for I have not met with it in any Oriental authority, and it is certainly quite unknown at present; but if it be a genuine name (and not a French invention of the seventeenth century as I suspect from finding it first in Petit de la Croix's Maps), it must be regarded, I think, as a corruption of the well-known Mongol title *Karshi*, signifying, according to Baber "a burial-place" (Leydens Baber, p. 54), but according to others "a Palace" (see '*Hist. de Timour*,' tome i. p. 95, and Yule's '*Cathay*,' p. 298), and which was also applied to the great city south of Bokhara. I should think it, however, more likely that *Kie-cha* derived its name from the same people who founded the city of Kashghar (*Kie-sha* of Chinese), and also colonised both Cashmir, and Cashgar which now represents the old region of *Belur*. In Huen-tsang the name of the capital of Ko-pan-to is not given, but the adjoining district of *Ou-cha* can hardly be other than Md. Amin's *Uchi*, which joins Tash-kurghán to the eastward; and in the two great Buddhist buildings which are described by Huen-tsang in these two cities, a *vihára* and royal palace in the capital of Kopanto, and a very ancient and lofty *stupa* in the neighbouring city of Ou-cha, we may, I think, recognize the two monuments which are portrayed in the map of Agatho-dæmon, one as the *λιθινος πύργος*, between the sources of the Oxus and the Yarkend River, and the other as an independent tower on a hill to the eastward. (Ptol. lib. vi. c. 13, and Reinaud's '*Abulfeda*,' Introduction, p. 369.) No English traveller has yet penetrated to this spot, and neither Marco Polo, nor Goetz, nor Md. Amin were likely to notice Buddhist remains.

* Ibn-el-Fakih, who in about A.D. 940 composed a geographical work, mainly

again, where Jemshid placed the most sacred of all the fires, to be transported by Gushtasp* in a later age to Cabul, I would propose to identify with the Kishm of the geographers in the south-west frontier of Badakhshán, as the Chinese orthography of the name was Ki-li-sse-mo; and Colonel Gardiner describes the ruins of "an ancient massive building" in this neighbourhood which may very well represent the early fire-temple.†

on the authority of Jyháni, has left it on record that the source of the Oxus was at a place called *Ghandamir* (or *Ghandamir*), in a mountain called *Rivansharan*, on the confines of Cabul. See Yacút's 'Mojeim,' in *coce Jihán*, and consult Reinaud's 'Abulfeda,' *Introd.* p. lxiv. and text, p. 101. *Rivanshar*, or *Rivansar*, I have also restored as the seventh name in Birdn's list, taken from the *Rámáyana*. Now *Sar*, answering to the Sanscrit सर is still used in the country, according to Hayward, for "a lake;" and *Rivansar*, therefore, may mean the "Revand Lake," in allusion to the traditional glacier lake, from which Macartney also derives the Oxus. Gardiner, however, in two passages, mentions a district of *Rivanshar* between Gilgit and the Snowy Range, which may represent the *Rivansar* of the Arabs; and the name is common in Persia for a mountainous region prolific in streams ('*Asiat. Soc. Journ.*' for 1853, pp. 301 and 441). (Observe, however, that Birdn in the *Canin* places *Rivansharan* to the west of Hamidn, thereby showing, if the indication be correct, that Ibn-el-Fakih must have confounded the Oxus with the river of Balkh.—See the map in Sprenger's 'Reiseurouten.') As Gardiner actually traversed the Gilgit Valley from the Indus to the Snowy Mountains, and finally crossed over into Chitral, being, in fact, the only Englishman up to the present time who has ever performed the journey throughout, it is quite possible he may give the name of Rivanshar from information acquired on the spot; but I always doubt his independent authority, and in the present case am rather inclined to believe that he copied the names of Darkoot (printed Varkoot), Rivanshar, and Booloophir as lateral valleys of the upper Gilgit country, from Arrowsmith's map of 1834, in which they were inserted on the authority of Wilford's original chart. At any rate, thanks to Mr. Hayward's enterprise, we are now sufficiently acquainted with the nomenclature of Gilgit and Yassin to be satisfied that no such names are known in the present geography of those districts.

* For the fire temples of Mounts Revand and Kharesem, see 'Zend Avesta,' tome ii. pp. 383 and 384, and for Mount Goand, p. 367.

† Wood ('Journey to Source of Oxus,' p. 250) has exactly defined the position of Mount Kishm in the range to the south-east of Talikhán, and this agrees perfectly with the notices of the place collected by Quatremère ('*Not. des Man.*' tome xiv. p. 223) from the Akbar-námeh. Compare also the route given in 'L'Histoire de Timur,' tome i. p. 167, which led from the passage of the Oxus to Taikán, Kila-owghán, Kishm, and along the skirts of the range to Jerm; but care must be taken not to confound Kishm with either Ish-Kishm or Ish-kemesh, the three places being quite distinct. Gardiner describes this "ancient massive building" as "100 yards square, and 100 high (?), the first 20 yards built up with well-polished blocks of stone about 2 yards square. It is not quite square, the north side having an angle in it; the circumference is 420 yards, and it is half a mile from the river on the south bank, and 3 stages south of Badakhshán. Numerous clay idols are found in the ruins around." This account is no doubt exaggerated, but the locality is clearly marked upon the Warsik River (called Zoon by Gardiner), which flows from the Kishm, or Takht-i-Sulimán range, to Meshed, where it was crossed by Wood on the high road from Talikhán to Fyzabád; and it would be well worth examination by any future travellers who may penetrate to that region. The place is not noticed in the fragments of Gardiner's 'Journal,' published in the '*Journ. Bengal As. Soc.*' for 1853; but it would appear from the abstract of his travels, by Sir H. Durand, which has

But the portion of this region which must have been especially venerated by the early Zoroastrians, was the mountain district north of the Oxus and west of Pamír, for here volcanoes and natural fires seem to have been always in activity. Wilford gives an excellent description of the country from the Váyu Purána: "There are many valleys," he says, "to the west of Méru, and among the mountains of Su-bakhshu, where the ground emits flames for the space of 100 leagues. It is a most dismal place, horrid to the sight, inaccessible to mortals; the sight of it makes the hair stand on end. There is Vibhavas, who presides over the fire, burning without fuel; he who is the great deity, and therefore seems to have life. . . . There that very fire which one day will spread over and encompass the whole universe, is constantly burning," &c.* The Chinese in the seventh century have similar notices, stating that in Tsao, or Osrushna (south-east of Samarcand), sacrifices were made to the god *Tesi*, who was worshipped in all the regions of the west,† (and whom I thus suppose to be "fire"—*Tesh* or *Atesh*—deified,) the priest standing before a cavern, from which issued smoke, which killed any one who touched it. Masúdí, in describing from an eye-witness the route which leads from Samarcand to the east, and is the most direct road to China, says the flames issue from the mountains at night over an extent of 100 farsakhs (exactly the 100 yojanas of the Váyu Purána); and he goes on to speak of a burning valley through which it is necessary to pass;‡ his description coinciding as nearly as

been recently printed in the 'Friend of India' (Sept. 27th, 1870), that he did actually cross on one occasion direct from the Khawek Pass to Jerm, a route which would have led him to Kishm, and it is possible, therefore, that he may have inserted the notice in question in his account of the sources of the Oxus ('Journ. Bengal As. Soc.' for 1853, p. 434) from some other portion of the Journal as yet unpublished. The Kilissemo of the Chinese joined Moung-kien (Moungkan of Barnes, and Moongham of Gardiner), which exactly suits the position of Kishm, and the latter name is probably a mere contraction of *Kirishm*, which would nearly represent the Pehlevi *Khereshm* ('Vie de Hiuen-Tsang,' pp. 269 and 389).

* 'Asiatic Researches,' vol. viii. p. 361.

† 'Nouv. Mém. Asiat.,' tome i. p. 235. Hiuen-Tsang particularly notices the fanatical spirit of the fire-worshippers of Samarcand ('Vie de Hiuen-Tsang,' p. 59). At the time of the Arab invasion, the districts immediately north of the Oxus were inhabited by Buddhists, but the Zoroastrians seem to have held all the country north of the Karadagh Range, where natural fires were so prevalent.

‡ See Reinand's 'Géographie d'Abulfeda,' Introduction, p. cccxxi. I shall examine later whether Masúdí here refers to the high road by the Terek Pass, which conducts from Kokand to Kashghar, or whether there was not in antiquity a more direct route leading from Samarcand up the valley of the Zarafshán to its source, and then crossing Pamír by the Karakúl Lake to the Kizil-yart Range, over which it passed, to the plain of Cashgaria. There are many Oriental notices which seem to indicate such a route; and if Colonel Gardiner is to be believed, he actually followed it in 1828 from the foot of the Ak-tagh Range direct to Yarkend without passing through Kashghar.

possible with that of Mons. Lehmann, who, in 1840, visited the Upper Zarafshán and the Fán valley, leading to the Lake Iskender Kúl, and observed this same phenomenon of a burning tract of country, which he attributed to the accidental ignition of carboniferous strata.* The Mahomedan geographers all notice these natural fires in their accounts of the mountains of Buttum and the famous mines of Sal Ammoniac;† and they would seem still to preserve their sacred character, for Colonel Gardiner mentions having met on the frontiers of Badakhshán,‡ three Hindus, *Suntiyassis*, who had been on a pilgrimage to a volcano in Kirghiz; and Wood also at the pass of Ishkishm fell in with an Indian "Callender," who was apparently bound on the same errand.§

The most numerous, however, as well as the most interesting remains in the region of the Oxus are those undoubtedly of Buddhist origin. I have already noticed the famous buildings in Ko-pán-to (about Tashkurghan ||), which were known to the

* Lehmann, who visited Samarcand with Khanikof in 1840, published his account of the Zarafshán Valley at St. Petersburg in 1852, and this is the only notice that has been available for geographers until the present year, when Mr. R. Michell has furnished the Royal Geographical Society with a translation of Monsieur Fedchenko's 'Memoir' on the same region. I shall have a good deal to say on the subject of the Zarafshán river in the sequel; but I may here notice, what seems to have escaped previous inquirers, that Baber has left on record a very excellent description of the famous Iskander-kúl Lake, which he visited on his flight from Hissar up the course of the Kanrud to the valley of the Samarcand river. Leyden's 'Baber,' p. 85. The lake is named in the English translation *Kán*, owing to the mistake of reading ك for ق. It should, of course, be *Fán*, as given by Fedchenko, and as occurring in the Sir-i-tak of *Fán-táu*, by which the neighbouring portion of the Kara-dágh Range (the *Sir-i-tak* of Baber) is designated in our modern maps.

† See the extracts in Ritter, 'Asien,' tome v. p. 745-747 and Humboldt's 'Asie Centrale,' tome ii. p. 18. All the geographers—Istakhri, Ibn Haukal, Edrisi, and Abulfeda—repeat the same description, and almost in the same words.

‡ Gardiner further distinctly states that "Two days' journey north-west of Oorcombak (which was at the eastern end of the Oostam(?) Pass, through the Aktágh Range 20 days south-west of Kashghar), there is a sacred spot of perpetual fire issuing from a rock." ('As. Soc. Journ.' for 1853, p. 295.)

§ Wood's 'Oxus,' p. 379.

|| The name of *Tash-kurghán*, or "the stone fort," is certainly of recent origin. Mirza Hyder, the author of the *Tarikh-i-Rashidi*, who wrote in about A.D. 1535, was apparently unacquainted with the name, though in passing direct from the Kara-korum defile to Vakhán by Raskam and Tagh-dum-bash (both of which he names), he must have traversed the Tashkurghán district. In describing the upper course of the Yarkend River, he speaks of the district of *Sarik-kúl*, صارىت كول, as the point where the stream that has been hitherto running west turns to the north-east, and this is, I believe, the true form of the name of Sirkul, or Sir-i-kol, which even at the present day is used indifferently with Tash-kurghán for the tract in question. The Persian historians of Jenghiz Khan have also all preserved the name of *Sarik-kúl* as that of the district between Yarkend and Badakhshan where the rebel *Kushluk* was captured, and Quatremère has found a notice of the same district in Rashid-ed-dín. 'Not. et Ext.,' tome xiv.

Greeks as the "Stone Towers;" and, as we descend the river, traces of the old *vihāras* and *stupas*, commemorated by the Buddhist travellers, ought to be still found spread over the whole face of the country. Wood mentions three positions on the Penja, in Wakhān, where there were ruins of the pre-Islamic times—at Kila' Zangnebar, Kakah, and Sumri, in the neighbourhood of Kūndūt;* and it is possible that this last-named mound may mark the site of the ancient temple of Buddha, with suspended and self-turning dome, which Hsien-Tsang describes at Hoen-to-to, the capital of She-ki-ni, or Shignān.† Another very curious region, which seems to abound in antiquities, but of which we know very little from actual observation, is the country along the great bend of the Oxus from the ruby mines to the junction of the Badakhshān River. This district was named *Ta-mo-si-tie-ti* by the Chinese, a name which long survived in the *Terministāt* of the Arabs, one of the chief towns of Khntl, and it was said to contain ten convents.‡

p. 222. In the Chinese astronomical tables of the last century, *Tash-kurghān* is named *Karaku* by the Jesuit fathers, probably out of deference to historical tradition (for I cannot believe that such a title was then in current use); and *Sirikul*, in the same table, would seem to be a lake to the north-east of that city, the locality agreeing very well with the indication of Mirza Hyder, but being utterly irreconcilable with the position of the *Sir-i-kul*, or Lake Victoria of Wood, which was 100 miles farther west. See Michell's 'Central Asia,' p. 322. It may also be noticed that in three different passages where Mir Izzet Olleh, in 1813, refers to the district of *Tash-kurghān*, he uses the name of *Serkul*, or *Sir-i-kol*, though at the same time he puzzles us sadly by placing this district of *Sir-i-kol* at the distance of only three or four days' journey from the head of the Terek Pass ('Journ. R. Asiat. Soc.,' vol. vii. pp. 297, 299, and 322). The name of *Sarik-kul* (or *Sir-i-kol*) has never applied, I believe, at any time, ancient or modern, to Wood's lake. The left-hand valley leading up to Pamir from Wakhan was called the "*Dereh-i Sarik-kul*," because it was the high road to *Sarik-kul* or *Tash-kurghān*, and not because it led to the lake. Wood's error, however, has now become almost classical.

* Wood's 'Oxus,' p. 333. The Zanguebar of Wood is named *Zing* both in Md. Amin's route ('Davies' Report,' Appendix, p. cccxvii.), and in Hayward's 'Route,' viii., No. 14. I know nothing of Kakah, or Sumri, or Kūndūt, as they are not mentioned in the routes either of Md. Amin or of Abdol Mejid, who both passed up the valley of the Penja. The name of Langar-Kish, which Wood applies to the station near the junction of the two upper arms of the Oxus, and where the road to the eastward bifurcates (Langar-Vakhān in Abdol Mejid's route, and Langar-Zing in Md. Amin's), recalls to mind the mount *Kish*, of the Bundeshli, from whence there were two roads conducting to *Kang-diz* (or Turkestan). The passage is very corrupt ('Zend Avesta,' tome ii. p. 367), but *Kish* would seem to be connected both with *Boun*, or Pamir, and with *Sejda*, or the Tsang-ling Mountains.

† 'Vic de Hsien-Tsang,' p. 270. The modern Shignān is lower down the river than Vakhān, in which district Kūndūt is situated; but Vakhān does not appear at all in the Chinese accounts, and we must suppose, therefore, that the interval between Badakhshān and Pamir was filled up in ancient times with Shekini to the north of the Oxus, and Tamositeiti to the south.

‡ There is no name in the Arabic geography of these regions that has been more disfigured than *Terministāt*. It is only in the earliest writer we have, Ibn Khordadbeh, that the *r* has been preserved. In all the others, *Istakhrī*, *Ibn*

There are also in the vicinity the ruins of at least two extensive cities, which date from Buddhistic times, one of which, to the westward, is named Barbarrah by Wood, but Kafir Derra by Gardiner, who visited the site from Kharlúk, on the Kokeha; while the other, on the eastern side of the district, is described, in great detail, by Gardiner under the name of Shoh; the true form of the name, as it is pronounced at present in the country, being Sheva.* Near the former ruins, Gardiner also observed the remains of a colossal horse in pitchstone, which agrees singularly well with the Chinese account of the magical horse, who dwelt in a cave on Mount Pho-li, south of the Oxus, but to the north of the capital of Tokharistan.† Probably all the ancient mounds in this part of the country, at Kurghán-teppeli and Kurreh-teppeli, on the right bank of the Oxus, as well as at Turgi Teppeli and Shirwán,‡ on the left bank, would be found, if they were excavated, to contain Buddhist relics; and there must be also many sculptured caverns of the same sect, like those described by Gardiner at Shoh and Abba Getli, and by Moorcroft at Takht-i-Rustúm and Hazarsoom, on the river of Khulm.§ I

Haukal, Jyhání, Birání, Edrísí, even in the accurate Ibn Dustek, the *r* has been corrupted to *l*, and the usual form of the name is *Talmístah*, or *Tamalístah*. I have everywhere restored the form after the Chinese orthography. The town known to the Arabs under this name was only one stage from the famous stone bridge on the *Vakhsháb*, or *Surkháb* river, and may be the same as the modern *Kuláb*; but in the time of Hsien-Tsang the district must have extended much further to the eastward, being, in fact, coterminous with Pamír. ('Vie de Hsien-Tsang,' p. 270.)

* Wood's 'Oxus,' p. 395, and Gardiner's 'Mem.' in the 'Beng. Asiat. Journ.' for 1853, pp. 289, 291. Gardiner is confused as usual, but Khoolook, 37 miles north-east of Kunduz, can only be the Koorloogh (properly called *Kharlokh* or *Qarluk*, from the well-known Turkish tribe) of Abdol Mejid, where he crossed the Kokeha. Gardiner's account of Shoh is certainly very curious, and must have some foundation in fact. The river Sheva is laid down in Wood's map as joining the Oxus below Shignán, and Pundit Munphool reports that at present the Sheva Valley, from whence the reigning Mírs of Badakhshán have drawn their origio, is the most fertile district in the province.

† Gardiner's 'Mem.,' p. 290; and 'Nouv. Mém. Asiat.,' tome i. p. 245.

‡ Kurghán Teppeli, on the right bank of the Oxus, near the junction of the *Surkháb*, is unnoticed by Wood, who passed along the opposite bank of the river, but is laid down in most of the maps, and is very frequently mentioned by Gardiner, though the orthography of the name is sadly bungled in his printed 'Mémoir.' It probably marks the site of *Halaverd* or *Ἀλῆροδα*. I only know of Kurreh Teppeli, which may be the old *Kordlián*, from the route of the Bokhara force, in its recent invasion of Badakhshán, the troops, after the capture of Del-i-now, having first debouched on the Oxus at Kurreh Teppeli, and then marched on to Kurghán Teppeli. Wood applies the name of Turgi Teppeli to a large plain on the left bank of the river, but the title must be derived from some particular mound, which in all probability marks the site of one of the old capitals. Shirwán seems to have faced the old *Sálasarái* of Timur's wars, and to have covered one of the principal passages of the river.

§ See Gardiner's 'Mem.,' *loc. cit.*, and Moorcroft's 'Travels,' vol. ii. It is much to be regretted that the antiquities described (pp. 402 and 410) by Moorcroft have not been since more accurately examined. Gardiner also describes some most extraordinary ruins and caves in the Del-Kundi country, near the source of

should expect, again, important results from explorations on the site of Termid, and between that city and Balkh; for at Termid, the massive masonry of whose walls along the banks of the river was noticed by the Arab geographers,* there were several convents, with stupas and miraculous images of Buddha; while at Po-li and Ti-wei, between the river and Balkh, there were other two stupas, covering relics which dated from the time of Buddha himself.† The ruins, however, of the city of Balkh itself should be the great treasure-house of Buddhist antiquities.‡ Here there was the famous convent, built, as Hinen-Tsang says, by the first king of the country, and containing both an image of Pi-sha-nen (Vaisrav ana, "the God of Wealth"), and a statue of Buddha, of extraordinary richness, besides numerous relics of the utmost rarity. Attached to the convent also was a *stupa* 200 feet in height, covered with a most brilliant casing, and a *vihāra* of peculiar sanctity, which contained some hundreds of monumental pillars of the saints. It is probable that the Mahomedans, in describing the famous Buddhist idol-temple of Balkh, classed all these buildings together.§ At any rate, the name of *Nau-behār*, نوبهار, by which

the river of Balkh. He calls the place *Moh-zarkhala*, or "the buried wealth of Moh" (?), and his account savours strongly of the marvellous; but that there must be some truth in it, I infer from a very similar notice which was published by Wilford in 1799, on the authority of a traveller who had visited the spot. Wilford gives the place the name of *Mohi*, like Gardiner, and says it is on the road between Bamiyān and Balkh. Compare 'Asiat. Res.,' vol. vi. p. 464, with 'Journ. Asiat. Soc. of Bengal' for 1853, p. 383. Could Gardiner have copied from Wilford?

* Julien's 'Si-yu-ki,' tome i. p. 25; 'Journ. Asiatique,' 6th ser., tome v. p. 270; 'Edrisi,' tome i. p. 273; Yacūt in voce, &c. The names of Termid and Termistat are probably derived from the tribe of Termi (Ta-mi in Chinese), who dwelt in the neighbouring mountains to the south.

† Compare 'Vie de Hinen-Tsang,' p. 65, with 'Si-yu-ki,' tome i. p. 32. I have not been able to identify either of these sites.

‡ The name of Balkh is usually represented in Chinese by the form of *Fo-ko-lo* ('Vie de Hinen-Tsang,' p. 65 *sqq.*), but in the 'Si-yu-ki' we have the various readings of *Po-ho* and *Fo-ko*. Now there is no reason whatever for the lapse of the *l* in the Chinese name of Balkh, and I am inclined, therefore, to think that *Fo-ko* really represents a different form of the name, especially as Birūnī in the *Canin* gives the reading of باقى, *Baki*, as the ancient title of the city, which is in all probability corrupted from the original orthography of *Balkhdi*, as it appears in the 'Vendidād.'

§ For the Buddhist account of Balkh, compare 'Si-yu-ki,' tome i. p. 29 *sqq.*, with 'Vie de Hinen-Tsang,' p. 64 *sqq.* The best Arabic accounts of the ancient city, and especially of the famous temple of *Nau-behār*, are to be found in *Shazri* (MS.), in Masūdī (French translation, tome iv. p. 48), and especially in Yacūt in voce. A portion of Yacūt's notice is given in 'Dict. Géo.-Hist. de Perse,' par M. Barbier de Meynard, p. 371. but the whole article would be well worth translating. Mons. Pauthier, in his 'Marco Polo,' p. 108 *sqq.*, has collected together a good many notices of Balkh and the *Nau-behār*, both from Arabic authors and from modern travellers, but he has not recognised, nor indeed has any one, I believe, up to the present time recognised, the true etymology of the latter name.

the temple was known, is nothing more than a Persian rendering of the Sanscrit नव विहारा, *Nava-vihāra*, "the New Convent," or *Na-po-seng-kialan*, which is the name given to it by Hiuen-Tsang;* while the high pinnacle, from which a silken pennon floated of 100 cubits in length, can only refer to the adjoining *stupa*; and in the Chinese account it is the third building, the rendezvous of foreign scholars, which is alone called a *vihāra*.† I attach no great credit to General Ferrier's assertion that he found bricks stamped with cuneiform legends among the ruins of Balkh. The Achaemenian Persians, as far as we know, never used such bricks, and it seems in the highest degree improbable that the Scythians of Elymais and the Persian Gulf—the only other people to whom such inscriptions could have belonged—should have penetrated so far to the eastward; the more especially as there is no single inscribed monument in the intervening space of 1500 miles to connect the early civilisation of Western Persia with that of the Oxus.‡ It may be

* The meaning and etymology of the Chinese *Seng-kia-lan*, has been much disputed. The views of Remusat and Bournouf may be seen in 'Foe-koue-ki,' p. 19, note 5. Wilson hazarded the conjecture that *Kia-lan*, which is often used alone, was orithographically equivalent to *Vihāra* ('Journ. Royal Asiat. Soc.,' vol. v. p. 111), but this view has not been sustained. It has been decided, indeed, by Julien, that the true Sanscrit original is *Sangh-ārdma*, or "the garden of the priests," and Mr. Beal gives the following detailed explanation:—"The *Sangh-ārdmā* includes the *Vihāra*, or chapel, the various apartments of the priests, and the surrounding grounds,—what we should call a college."—'Buddhist Travels,' p. 9, note 2. Practically, however, the word replaces the Sanscrit *Vihāra*, whenever the two forms can be compared.

† It is particularly worthy of remark that the distinguishing feature of the *Nau-behār*, according to the Arabic authors, was the enormous length of these long pennons of silk which floated from the summit of the temple, and one of which, on the occasion of a sudden squall, was carried by the wind to Termid, 50 miles off, while the very same characteristic is indicated in the epithet of *eredhac drafsham*, or "the lofty bannered," which is attached to the name of *Bakhdim* in the original legend of the creations of Ormazd in the 'Vendidad.' See 'Zend Avesta,' tome i. Part II. p. 266; Brockhaus's 'Vendidad,' p. 50, and Bournouf's 'Yaçna, Not. et Eclair.' p. cx. Are we to suppose then that the 'Vendidad' is no older than "the first king of this country," who, according to Hiuen-Tsang, built the *Nau-behār*, or did the Buddhists continue the long floating pennons on their temple, which had belonged to the original Zoroastrian edifice?

‡ I observe from a note to p. 110 of Panthier's 'Marco Polo,' that on some former occasion I have been sanguine enough to admit the genuineness of Mons. Ferrier's asserted discovery, and have sought to assign the inscriptions in question to the *Kushān*. (I see that Panthier quoted from a note to Ferrier's 'Travels,' p. 207.) How I could have been so rash, however, I can hardly understand, as both Moorcroft and Burnes distinctly state that no remains of antiquity at all are at present visible at Balkh. With regard to the *Kushān*, it is certain that that tribe when at the head of the *Yue-chi* Pentarchy, in the 2nd century B.C., did hold Balkh, and the name of *Kush* was in consequence for a long time afterwards attached to the city, (compare the statement to this effect in 'Yacūt,' in *roca Tukenderieh*, with the well-known passages in Moses of Chorene's 'Geography,') but it is to the last degree improbable that the Central Asian *Kushān* of the 2nd century B.C. can have been in any way connected with the Elymeans of the Persian Gulf, who flourished six centuries earlier.

assumed, I think, that Bakhdi, joined in the 'Vendidad' with Sughd and Merv, must certainly represent Bakhtar or Balkh,* and that there is thus evidence of its having been one of the earliest Zoroastrian settlements; but if Hsien-Tsang be right in ascribing a *stupa*, a short distance west of the city, to the time of Kasyapa, Magisin must have yielded to Buddhism in the valley of the Oxus at a very early period;† and there can be no truth whatever in the popular tale of the Court of Gushtasp and the successful preaching of Zoroaster, at Balkh. The 'Bundeheshi' itself, indeed, has preserved a legend which is fatal to the theory of a dominant Magism in Bactria at this period; for, in the description of *Vadkeish*, or Badgheis—a district to the south-west of Balkh—there is a notice of *Bakiser*, "of the poplars," where Afrasiáb of Turán founded a strong and flourishing settlement, making it a rampart (against the spread of Zoroastrianism). Now, *Bakiser* (or *Baghishúr*, as it is named by the Arab geographers) is a well-known small town of Badgheis, west of the Murgháb. The name is remarkable, from being formed of *Bagh*, "god," and *Íshwar*, the ordinary title of Siva,‡ whose worship we know from other sources to have been connected with Bactrian Buddhism;§ and the tradition, therefore, in all probability, points to the esta-

* It is true that Bournouf ('Yagna, Not. et Eclair.' p. ex.) prefers to identify Bakhdi with Badgheis, and that Khanikoff ('Ethnog. de la Perse,' p. 37) approves of this explanation; but there is really nothing to recommend it, either geographically or etymologically. The statement of Biruni that Balkh was anciently called باقى, whether that form be read *Baki* or *Bakti*, would seem to settle the question.

† Kasyapa, as the predecessor of Sakya Muni, must date at least from the 8th or 9th century B.C., and it is quite possible that Buddhism prevailed in the valley of the Oxus from that early period; I think, indeed, we may gather from Persian tradition that Buddhism must have been the faith of the kings of Balkh up to the time of Darius Hystaspes, when a religious reformer (the so-called Zoroaster) first introduced the fire worship; for it is expressly said that Lohorasp, the father of Gashtasp, withdrew at a late period of his life into ascetic retirement in the *Nun-behár*, which was certainly, from its foundation, a Buddhist temple and convent.

‡ See 'Zend Avesta,' tome ii. p. 366, for this very curious notice of *Bakiser*. No European that I am aware of has explored this district between the Murgháb and the Heri-rúd, except along the high roads to the north of Herat, and we are without the means, therefore, of knowing whether any traces of the Turanian (or Buddhist) settlement, "a place like *Rum*, a city of triumph and delights," are yet to be seen. According to the geographers, the place was named indifferently *Bagh* and *Baghishúr* ('Yacút' in voce), just as in Sanscrit *Bhag* and *Íshvar* are used indifferently as names for Siva, the compound *BhagÍshvara* being further a kindred title with *Soménvara*, *Ráménvara*, &c. The Puránas also contain a tradition that *Íshvara* dwelt in Ketumála, which was the valley of the Oxus and the neighboring mountains. (See 'Asiat. Res.,' vol. viii. p. 339.)

§ I refer especially to the emblem of Siva, the famous hill of Nandi, which is found on the coins of Kadphises, and of several other of the Indo-Scythic kings of Bactria, who were unquestionably Buddhists.





*Dedicated
To His Excellency Don Manuel Pardo
President of the Republic of Peru.*

TTAHUANTIN - SUYU
OR THE
EMPIRE OF THE YNCAS
(EXCEPT QUITO AND CHILE)
IN ITS FOUR GREAT DIVISIONS
OF
CHINCHA-SUYU, CUNTI-SUYU
ANTI-SUYU, COLLA-SUYU

WITH
THEIR TRIBES AND AYLLUS OR LINEAGES
ALSO THE
ROUTES OF THE YNCA CONQUERORS.

By Clements R. Markham, C.B.

SCALE OF ENGLISH STATUTE MILES.

THE YNCA CONQUERORS

The Yucas	Limits of his territory-- Apurimac to Huncartampu. Ollantatampu to Quequesana	
Musco Capac	Conquests of his Successors-- Routes	coloured Blue
Sinchi Rocca	To Huncara (Conquest of the upper valley of Wila-mayu)	1
Uloque Yupanqui	To the Desaguadero (Cotaco)	2
Moya Capac	1 Round the Lake & to Pura 2 Moquechun 3 To Wiliti and Arequipa	3 4 5
Capac Yupanqui	1 To Viti & Oariqui (Canti. ayu) 2 Huallaripa to Acari, Orosilla, Quileu 3 Tarca, Chayanta &c. 4 Oros-huasi, to Huama by Cocha-cana, under his son (Rocca, l. p. 267) thence to Sanasea	6 7 8 9
Inca Rocca	Amanay, Tucuman, Quinualla, by Cocha-cana Orosamba to Antahuaylla, Orosuira, Wila Sila for (Tusilla) Ollantatampu to Hunc-patu (his son Yahuar-huacac)	10 11
Yahuar-huacac	Quillaca, Chichu to Illpi (Atucanu)	12
Vira-cocha	1 Orosco War 2 Complete conquest of Chichu to Illpi 3 Peru, Sauraca, Peru, Peru & Peru (Irregular l. p. 76) 4 Tucuman submitted	13 14 15 16
Pachacuti	1 Huancas, Sausa, Pampa, Chucurpa, Huaylla Aman, Yuyu, Huacuz, Huacupampa, Chichuaca Huanchucui, Orosuira 2 Sanasea to Vira, Peru, Chichu, to Rima, Chimu	17 18
Inca Yupanqui	Peru, Chichuana	19
Yupac Yupanqui	Huanchucui to Chichuana, Huaypampa, Ayahuasi	20
Huayna Capac	Chimu to Tumpi Tumpiz The Author's routes.	21

AN ENLARGED MAP OF THE CRADLE OF THE YNCA RACE



blishment of the furthest Buddhist settlement to the westward, the entire region to the east of this point being essentially Buddhist up to the period of the Arab conquest.*

XXI.—*Notes to accompany the Map of Tlahuantín-Suyu, or the Empire of the Incas.*† By TRELAWNY SAUNDERS.

THE distribution of the tribes which occupied distinct parts of Peru up to the time of the Spanish Conquest is described with much precision in Mr. Markham's paper, and called for corresponding attention in the construction of the accompanying map, which has been prepared expressly to illustrate it. The map is, it is believed, the first contribution to the historical cartography of the Peruvian Andes. It covers the entire period of the Yncarian Empire, from its rise in pre-historic times, to its sudden fall under the Spaniards; and traces its aggrandisement step by step. It is impossible to follow a narrative of conquest, or to study the distribution of nations and tribes, without desiring to understand the aspects of the country under review, and to have those aspects placed before the eye in a graphic map.

The Peruvian Government has been foremost in excellent intentions to supply such a want in the case of Peru. An elaborate geography and a handsome folio atlas were published in 1863, at the expense of that State, by the learned brothers Mateo and Mariano-Felipe Paz Soldán. Both works are merely compilations, or little more, and unfortunately render manifest the inadequate character of the materials existing for such purposes. The author, indeed, fairly avows in his Preface the defective basis of his labours, and proclaims his want of those systematic investigations without which geographical science cannot be satisfied. In this want Peru indeed is only on a par with the rest of South America; and geographers for the present must be content to contemplate, as in a dream, the time

* The Harmecide Buddhists of Balkh intermarried with the kings of Saghánián, and when Kotaibeh, who was sent by Hejjáj to reduce Khorassán, crossed the Oxus, he found the king of Saghánián confederated with the kings of *Ahrún* (Arheng of Timur, and Olini of Chinese) and *Shumán* against him. Another ally also is mentioned by Beladhori, the king of *Kifán* (or "Kipin"?). See Goeje's Beladhori. Ps. 417 and 419.

† Vide Mr. C. R. Markham's paper, "On the Geographical Positions of the Tribes which formed the Empire of the Yncas" (*Journal R. G. S.*, vol. xli. p. 281), which this map, compiled by Mr. Trelawny Saunders, is intended to illustrate.

when the various governments, imperial and republican, of that magnificent continent, will unite in promoting a general system of triangulation and survey.

Beyond the present Republic of Peru, the empire of the Incas extended on the south into Bolivia, Chili, and the Argentine Republic; and on the north it included Quito, now Ecuador. The present map embraces Bolivia as far as Potosi, and the southern limits of the basin of Lake Titicaca. For this portion it is partly indebted to the Government Map of Bolivia, drawn by Lieutenant-Colonel Juan Ondarza, Commandant Mujia, and Major Camacho in 1859. It is only fair to add that this work is at least as much amenable to criticism as the Atlas of Peru.

In penning the foregoing remarks on the leading maps of Peru and Bolivia, it is not forgotten that the coast-line was surveyed for the Admiralty by Captain, afterwards Admiral, Fitz-Roy. But that grand work is too limited, with reference to the area of the country at large, to modify the general conclusion. It will do no injustice to the scientific labours of Pentland, Smyth, Raimondi, and others, to regard them in a similar light.

In studying Paz Soldan's Atlas, with a view to the construction of the present map, it became obvious that the atlas required various corrections. Thus it was necessary to amend the maps of Puno and Cuzco, according to the notes and observations on the Eastern Cordillera, of Mr. Markham, Don J. G. Nystrom, and Don Antonio Raimondi. Of equal importance are Raimondi's observations on that part of the Eastern Cordillera, between Mantaro and Apurimac, defining the altitudes of the summits, and also of the confluence of the two rivers. The observations of Herr Wertheimann between Huanuco and the Pachitea, under Admiral Tucker's expedition, supplied another section of the Eastern Cordillera; and, together with Raimondi's observations, exhibit a remarkable recession of the Cordillera at those points. Recent observations on the Huallaga and at Moyobamba (Muyupampa) have also served to give additional precision to the delineation of the great eastern slope of the Andes.

Advantage has been taken of the form of the map to exhibit the great rivers eastward of the Andes, in accordance with recent explorations. The Beni and Madre de Dios have been delineated according to a Brazilian drawing, kindly communicated by Colonel Church, whose engineering labours in surmounting the rapids of the Madeira by a railway, have led him to acquire much information on this obscure region. The unequalled surveys of Mr. Chandless on the Aquiri, Purus, and

Jurua have been introduced, together with the tributaries of those rivers not included in his surveys, but derived from the Brazilian drawing before mentioned. The Javari is according to the recent Peruvian and Brazilian survey of that river. The Ueayali is derived from a drawing liberally communicated by Lieutenant Salaverry, of the Peruvian navy. It is said to represent the survey of the Ueayali made by Admiral Tucker for the Peruvian Government, and corresponds with observations reported to have been made on that river by Tucker's expedition. The drawing is in an antiquated style, and invites confirmation. The Peruvian Government does not appear to have published the results of its explorations on the great affluents of the Amazons, in which all geographers must take a very great interest.

One of the objects of the present map has been to delineate the Peruvian Andes in a graphic manner, consistently with the best authorities relating to the bases, summits, slopes, plateaus, and other prominent features of the mountains. At the same time, the special purpose of the map—the distribution of the ancient tribes—has had to be kept in view, to the exclusion of names and details which were not required by that speciality.

The Eastern Cordillera in Bolivia is delineated from Ondarza, amended by Pentland, Rey, and the Brazilian map. In Peru it is drawn from Mr. Markham's notes and observations between Carabaya and the Tono. The contorted passage of the Urubamba across the Cordillera is from Paul Marcoy. The great indent in the range is due to Raimondi's series of observations for altitude down to the confluence of the Apurimac and Mantaro; and to Wertheman's series of altitudes from Huanuco down to the port of Mayro on the Pachitea.

The great elevation of Lake Titicaca was observed by Mr. Pentland, in the remarkable series extending across the Andes from the coast to the summits of the Eastern Cordillera. Mr. Pentland also marked the separation of the summits sloping down to the western shores of Lake Titicaca, from those belonging to the Pacific slope; and he determined the width of the highly-elevated plateau between them. These observations were subsequently confirmed and extended by Mr. Markham, and the plateau was more recently beautifully delineated by Paz Soldan, where it passes through the Department of Moquegua, from observations made by him during a residence of four years in that part. Further north, it has been the invariable practice to treat the water parting as the culminating summit of the Pacific slope. But snowy peaks like Misti (20,000 feet), at the foot of which Arequipa is situated, Coropuna and others,

forbid such a conclusion. The whole of the Western Cordillera will, it is believed, be found to correspond with the Moquegnan part, in the separation of the summits of the Pacific slope, from the summits of the interior slopes descending to the Marañon, the Pumpas, and the Apurimac rivers.

It is not alone the summits of the Western Cordillera that require definition, its base towards the Pacific is equally uncertain. Mr. Markham found Nasca and Ica at the foot of the mountains; while the Atlas of Peru omits the hills altogether in the map of the department containing those towns. Indeed no regularity or system has been observed in the hill-drawing of the different sheets of this atlas.

At the present moment the delineation of these magnificent peaks, ranges, and plateaus, owes very little to that careful study on the ground which alone satisfies the claims of geography. It is to be hoped that the Andes may soon become a field of observation for a corps of surveyors trained in such an alpine school as that of the Swiss survey.

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